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SCHWENCER,A. Licensing Branch 2

SUBJECT: Forwards response to Reactor Sys Branch 810608 questions, which will be incorporated into FSAR Amend 23. Response to Questions 211.148 & 211.209 will be submitted by 820115.

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January 6, 1982
G02-82-05
SS-L-02-CDT-82-003

Docket No. 50-397

Mr. A. Schwencer, Director
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Schwencer:

Subject: NUCLEAR PROJECT NO. 2
RESPONSES TO REACTOR SYSTEMS BRANCH QUESTIONS

Reference: Letter, R.L. Tedesco to R.L. Ferguson, "WNP-2 FSAR - Request for Additional Information", dated June 8, 1981

Enclosed are sixty (60) copies of responses to Reactor Systems Branch questions transmitted to the Supply System by the referenced letter. These responses will be incorporated into Amendment 23 of the WNP-2 FSAR.

Questions 211.148 and 211.209 are not included in this submittal. The response to these questions will be transmitted to the NRC by January 15, 1982.

Very truly yours,

G D Bouchey

G. D. Bouchey
Deputy Director, Safety and Security

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CDT/jca
Enclosures

cc: R Auluck - NRC
WS Chin - BPA
R Feil - NRC Site

Q. 211.054
(5.2.2)

The peak pressures occurring after closure of the MSIV's due to scrams initiated by high flux and high pressure signals are not consistent between Figures 5.2-4 and 5.2-5 of the FSAR. Further, Section 5.2.2.2.3.1 erroneously states that generator load rejection with bypass failure is shown on Figure 5.2-4. Correct these inconsistencies.

Response:

The inconsistencies stated are corrected in revised 5.2.2.2.3.1 and revised Figures 5.2-4 and 5.2-5. The curve for peak vessel bottom pressure from pressure scram in Figures 5.2-4 and 5.2-5 were mistakenly placed onto these figures and have been deleted. The reference to generator load rejection with bypass failure in 5.2.2.2.3.1 was incorrect and has been deleted.

Insert attached

Insert to Page 211.054-1

It should be noted that the design of safety/relief valves for General Electric reactors is based on the requirements of Section III, Nuclear Vessels of the ASME Boiler and Pressure Vessel Code, which has also been adopted by the NRC as part of the requirements in the Code of Federal Regulations, 10CFR50.55a. It is GE's interpretation that this Code does not require the failure of qualified scram signals such as the direct safety grade position scram. GE, therefore, considers the failure of the direct scram signal and relies on flux scram to terminate the event to be an appropriate licensing basis for reactor vessel overpressure protection compliance. Analysis shows adequate margin does exist in the design of the safety/relief system, and that even if the flux scram signal failed and the event was terminated by pressure scram (clearly an emergency event), the peak vessel pressure would still be less than the emergency and upset ASME Code limits. This position is expressed in a letter from I. F. Stuart to the Director of Nuclear Reactor Regulation (attention V. Stello, Jr.), dated December 23, 1975.

Q. 211.146
(5.4.6)

In the responses to Questions 211.046 and 031.015, it is stated that an automatic safety-grade switchover from the condensate storage tank to a Seismic Category I supply (i.e., the suppression pool) has been provided as a convenience to the operator. Provide a description of the automatic switchover feature and its initiating signal and confirm that both electrical and mechanical features are safety grade.

Response:

The automatic switchover feature for HPCS and RCIC consists of two Class 1E level switches for each system which will be mounted on a standpipe in the pump suction line. This standpipe is located on the common condensate supply line inside the reactor building at the reactor building/service building interface.

The standpipe is open ended and is used to indicate either a low water level condition in the condensate storage tanks (CST) or a loss of suction supply from the CST. The standpipe is designed, fabricated, and installed to Seismic Category I, Quality Class 1, and ASME Section III, Class 2 standards.

The piping from the reactor building/service building interface to both the RCIC and HPCS systems have been upgraded to Seismic Category I; each circumferential buttweld has been radiographically examined per ASME Section III, NC-5230, and a chemical analysis has been performed on all piping materials and as-deposited weld materials.

The HPCS P&ID (Figure 6.3-1) and Functional Control Diagram FCD (Figure 7.3-8) and the RCIC P&ID (Figure 5.4-9) and FCD (Figure 7.4-2) have been revised to indicate this design feature.*

*FSAR page changes attached.

Revise for SCN 81-435
Q 211.146
PFM 9/11/81

where the shutdown coolant system can be placed into operation.

Following a reactor scram, steam generation will continue at a reduced rate due to the core fission product decay heat. At this time the turbine bypass system will divert the steam to the main condenser, and the feedwater system will supply the make-up water required to maintain reactor vessel inventory.

In the event the reactor vessel is isolated, and the feedwater supply is unavailable, relief valves are provided to automatically (or remote manually) maintain vessel pressure within desirable limits. The water level in the reactor vessel will drop due to continued steam generation by decay heat.

Upon reaching a predetermined low level, the RCIC System is initiated automatically. The turbine driven pump will supply demineralized make-up water from the condensate storage tank to the reactor vessel. The suction line from this source is provided with an in-line reserve ~~tank~~ with appropriate safety-related level instrumentation. In the event that the water supply from the condensate storage tank becomes exhausted, the level instrumentation in the in-line reserve ~~tank~~ initiates an automatic switchover to the suppression pool as the water source for the RCIC pump. The in-line reserve ~~tank~~ has sufficient volume to maintain the minimum required RCIC pump NPSH plus a two foot margin while the switchover occurs, thus assuring a water supply for continuous operation of the RCIC system. The turbine will be driven with a portion of the decay heat steam from the reactor vessel, and will exhaust to the suppression pool.

During RCIC operation, the suppression pool shall act as the heat sink for steam generated by reactor decay heat. This will result in a rise in pool water temperature. Heat exchangers in the Residual Heat Removal System are used to maintain pool water temperature within acceptable limits by cooling the pool water directly or by condensing generated steam prior to entering the suppression pool. When using the steam condensing mode, the condensate discharge from the heat exchangers may be used as RCIC pump suction supply.

5.4.6.2.1.2 Diagrams

The following diagrams are included for the RCIC Systems.

a. A schematic "Piping and Instrumentation Diagram" (Figure 5.4-9) shows all components, piping, points where interface system and subsystems tie

Q. 211.012
(4.6)
(5.4.6)
(5.4.7)

Revise for SCN 81-455 Q 211.146 PTM 8/11/81

Describe the provisions incorporated into the WNP-2 facility to protect the RCIC and the RHR systems from cold weather and from dust storms and to assure satisfactory operational performance under any adverse meteorological conditions. In this discussion, include consideration of the standby liquid control system and the control rod drive (CRD) hydraulic system and any other sources of water for these systems (e.g., the condensate storage tank and the standby service water).

Response:

The RCIC system takes suction from the condensate storage tanks during normal modes of operation. The condensate storage tanks are provided with heaters to maintain water temperature above 40°F at all times. All above ground piping that contains water is heat traced to prevent freezing. Since the CST is a covered tank, the water supply is not affected by dust storms. To provide a Category I source of cooling water for the RCIC system, ~~an alternate path of cooling water can be valved in from~~ the suppression pool, which is inside the reactor building and protected from cold weather and dust storms.

automatic transfer circuitry has been provided to transfer suction from the CST.

The control rod drive hydraulic system normally takes suction from the main condensate system, downstream of the condensate demineralizers. All the piping is located within the Turbine Building or Reactor Building. The secondary source of water is the condensate storage tank if the main condensate system is not available. Both sources of water are protected from cold weather and dust storms.

The standby liquid control system, which is filled with sodium pentaborate, is provided with tank heaters and heat tracing to prevent solidification. The entire system is located within the Reactor Building, so it is unaffected by cold weather or dust storms.

The RHR system takes suction from either the recirculation piping or the suppression pool. All the piping is within the Reactor Building.

The RHR heat exchangers dissipate their heat to the standby service water system. All SW piping and components are either below the frost line, within the heated pumphouse, or, in the case of the spray rings, kept drained by the return header drain valve when not in operation. The SW pump suction is 26

Revise for SCN-81-435
Q 211.146 PTM 9/11/81

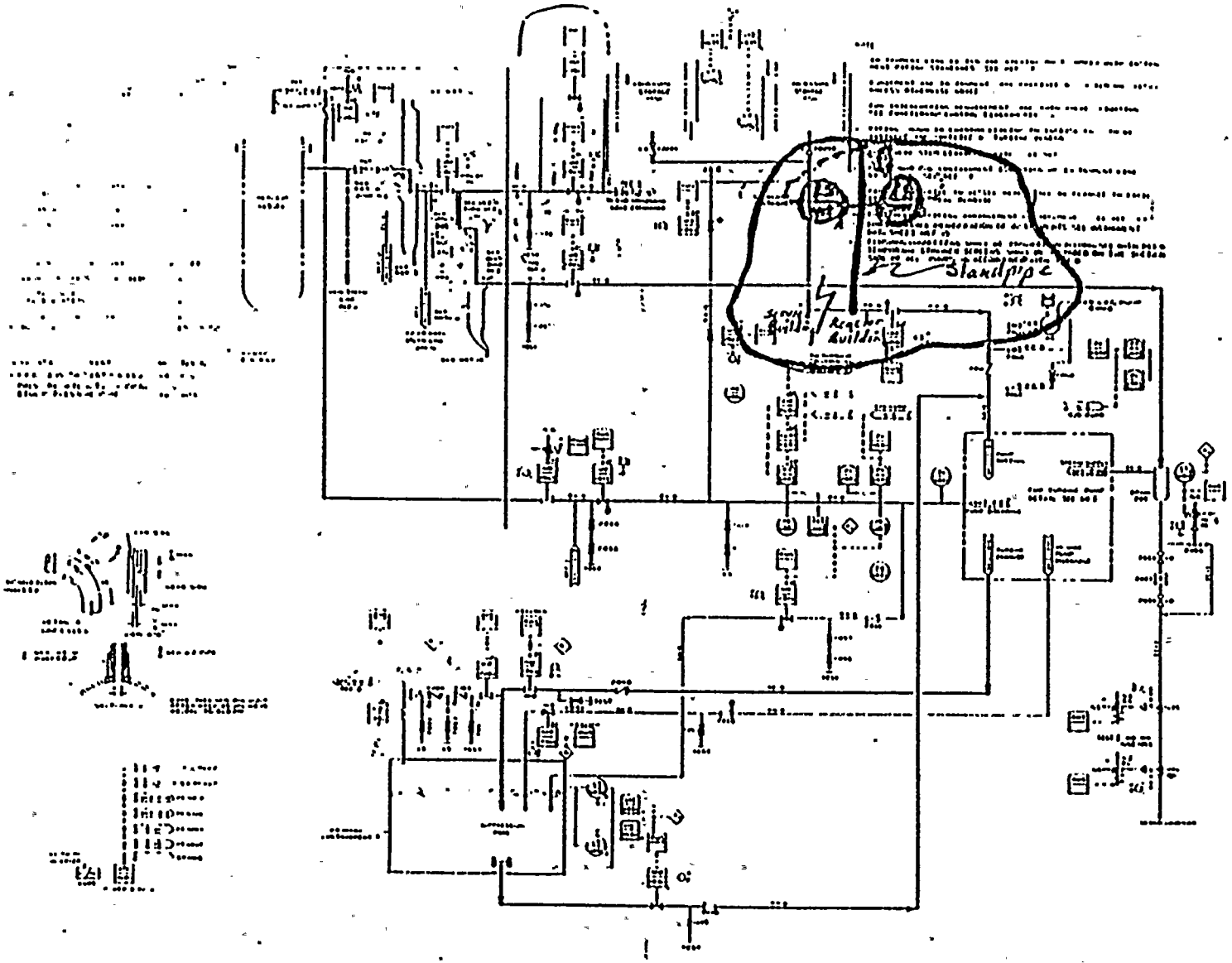
Q. 211.099
(7.5)

Since systems such as the HPCS, HPCI, and RCIC are initially aligned to draw coolant water from the CST and switch to the suppression pool following a signal indicating a low water level in the CST, it is our position that the CST water level should be included in Table 7.5-1 of the FSAR, entitled "Safety-Related Display Instrumentation." Accordingly, add the signal indicating low water level in the CST in Table 7.5-1. Alternatively, justify its omission.

Response:

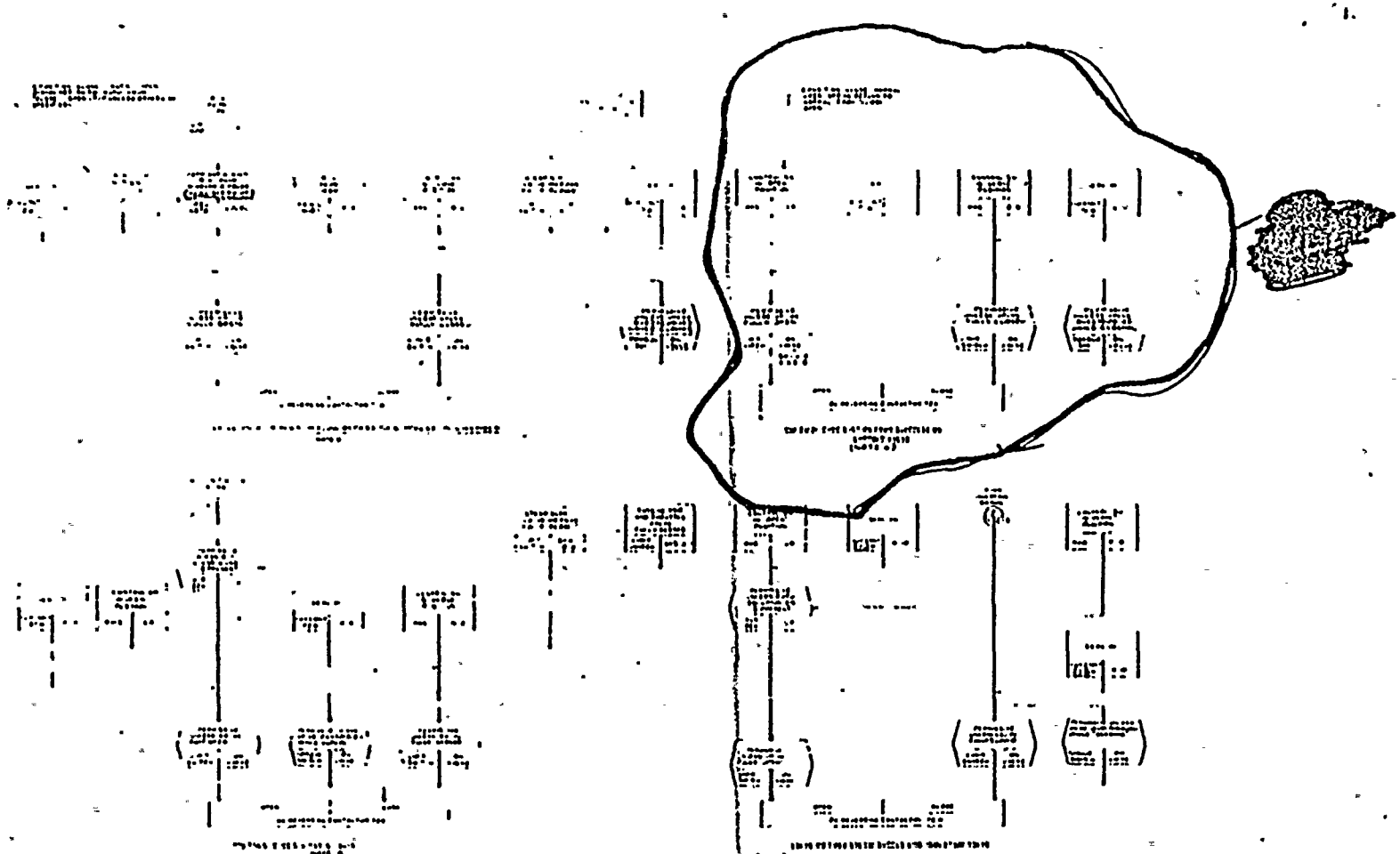
Level indication for the Condensate Storage Tank (CST) is provided in the Control Room. However, it is our position that the safety function of HPCS and RCIC is determined by displaying to the reactor operator pump discharge pressure and flow to the reactor, both of which are included in Table 7.5-1. Loss of level indication in the CST when HPCS or RCIC is operating will have no effect on the safe operation of the HPCS or RCIC systems because both systems switch their suctions from the CST to the suppression pool automatically following a signal indicating a low water level in the CST. The instrumentation effecting the switchover is Class 1E and an alarm is provided in the Control Room to indicate when switchover has occurred.

WNP-2 DESIGN INCLUDES AN INDICATION OF CONDENSATE STORAGE TANK LEVEL IN THE CONTROL ROOM MEETING THE REQUIREMENTS OF REGULATORY GUIDE 1.97 REV. 2. THIS INDICATION WILL BE DESCRIBED IN SECTION 7.5 AND INCLUDED IN TABLE 7.5-1 WHEN THIS SECTION IS AMMENDED TO DISCUSS THE REQUIREMENTS OF REGULATORY GUIDE 1.97.



WASHINGTON PUBLIC POWER SUPPLY SYSTEM NUCLEAR PROJECT NO. 2	P & ID RCIC SYSTEM	FIGURE 5.4-9

Revise Per 81-435
Q211.146

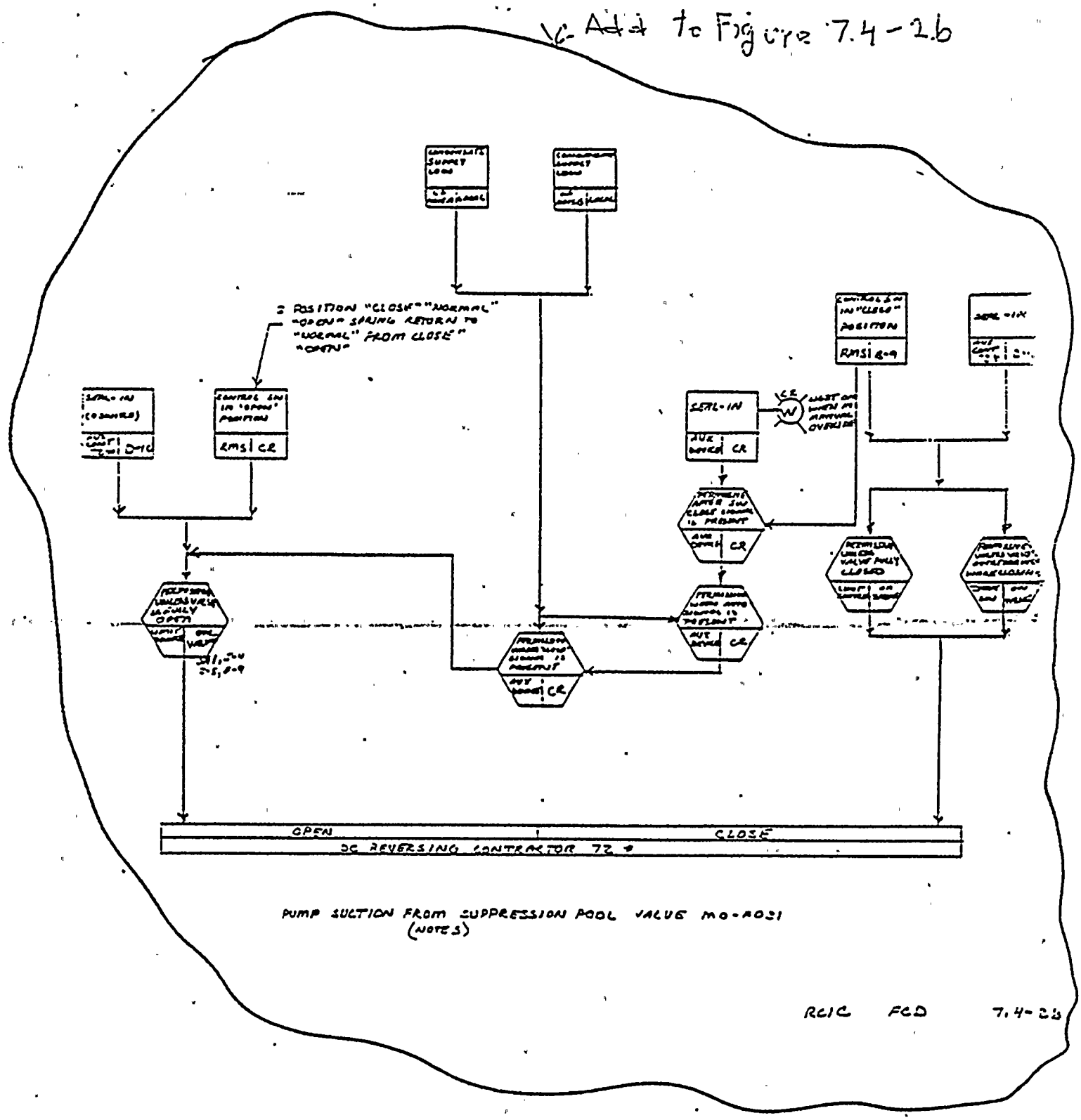


Revise per BRSCN 81-435 Q 211.146

WASHINGTON PUBLIC POWER SUPPLY SYSTEM NUCLEAR PROJECT NO. 2	RCIC SYSTEM P&D	FIGURE 7.4-21.

Revise for BRSCN 81-435
Q 211.146

Add to Figure 7.4-2b



PUMP SUCTION FROM SUPPRESSION POOL VALVE MO-A031
(NOTE 5)

RCIC FCD 7.4-23

Q. 211.159
(15.0).

GE calculations performed for decrease in reactor coolant temperature (Section 15.1) and for reactor pressure increase (Section 15.2) events using the proposed ODYN licensing basis model (NEDO-24154) have shown that in some cases a more limiting CPR is predicted than by the current REDY licensing bases model (NEDO-10802). Since Question 211.049 was submitted, the ODYN model has been approved. Based on a letter to Glen G. Sherwood dated 1/23/80 from Richard P. Denise, the staff's ODYN licensing position is that GE can proceed with ODYN analysis of certain events described in Section 15 of licensing application Safety Analysis Reports. Provide the following additional information in conjunction with Question 211.049:

a) An ODYN analysis of the applicable events (One-D) listed in Tables 2-1 and 2-2 of NEDE-25154-P.

b) A list of all input parameters for each event.

c) Justification that input parameters for each event are conservative.

Response:

a) The ODYN analysis of the applicable events has been completed and the appropriate changes to the FSAR have been made. The following WNP-2 FSAR sections have been revised: Table 4.4-1, Sections 5.2.2, 15.0, 15.1.2, 15.2.2, and 15.2.3.

b) The list of input parameters for the ODYN analysis are listed in Table 15.0-2 of the FSAR.

c) The input parameters for the ODYN analysis are either the same or more conservative than those previously used in REDY or have been corrected to reflect the latest plant design. See revised Table 15.0-2 of the FSAR for additional information.

Q. 211.197
(6.3)

Section 6.3.2.2.1 of the FSAR states that the HPCS system will automatically switch over from the condensate storage tank (CST) to the suppression pool if the CST water supply becomes exhausted or is not available. Review of Figure 7.3-10b indicates that automatic switch over will only occur if the CST water level drops to the minimum level and activates any one of the four level switches (two per tank). However, in the event that CST water cannot be supplied to the pump while the CST water level is above the minimum water level, automatic switch over is precluded. Resolve this apparent discrepancy between the P&IDs and Section 6.3.2.2.1.

Response:

Figure 7.3-10b, High Pressure Core Spray, FCD, sheet 2, has been changed to Figure 7.3-8b in Amendment 10. The level indicators which provide the signal for automatic switch over of both HPCS and RCIC are mounted on a Seismic Category I stand pipe in the reactor building. These level indicators as installed will sense a loss of suction supply as well as low level in the condensate storage tanks for the non-Seismic Category I portion of the condensate system. The piping downstream of the standpipe has been upgraded to Seismic Category I and will guarantee a suction supply during suction switch over to the suppression pool. Figure 6.3-1, HPCS P&ID has been revised to indicate these changes. See also the revised response to Question 211.146.