REVISED TECHNICAL SPECIFICATION PAGES

FOR

REMOVAL OF BUS 1A and 1B LOW VOLTAGE AUXILIARY RELAYS

Revised pages

53	70
55	71

References: 1) CNS Technical Specification Amendment 43, dated April 11, 1978, "Undervoltage Protection and Relays"

2) CNS Technical Specification Amendment 124, dated August 3, 1988, "Revised Setpoints for Undervoltage Relays"

3) CNS Technical Specification Amendment 144, dated July 17, 1991, "Revise Loss of Voltage Relay Settings"

INTRODUCTION

The Nebraska Public Power District (District) requests that the Limiting Conditions for Operation (LCO's) and Surveillance Requirements for Residual Heat Removal (RHR) and Core Spray (CS) relays 27X3 1A/1B be removed from the Cooper Nuclear Station (CNS) Technical Specifications. The RHR & CS 27X3 1A/1B are auxiliary relays in the first level (loss of voltage) undervoltage protection scheme for buses 1A and 1B. The relays are presently listed in Tables 3.2.B and 4.2.B on the above pages in the CNS Technical Specifications. The RHR & CS 27X3 1A/1B relays were originally included in the licensing of CNS with their function being to detect when power is available to Buses 1A and 1B from the Startup Station Service Transformer (SSST) and to bypass the sequential loading timers for the Emergency Core Cooling System (ECCS) pumps during a design basis Loss of Coolant Accident (LOCA). Emergency buses 1F and 1G normally receive power from the Normal Station Service Transformer (NSST) or the SSST via buses 1A and 1B respectively, with backup power directly provided by either the Emergency Station Service Transformer (ESST) or the Emergency Diesel Generator (EDG). As a result of past modifications and commitments by the District along with modifications scheduled to take place during the spring 1993 refueling outage the need for the RHR & CS 27X3 1A/1B relays to monitor bus 1A and 1B voltage will no longer exist.

DISCUSSION

During the upcoming spring 1993 refueling outage the Nebraska Public Power District (District) will replace the existing Emergency Station Service Transformer with a new Emergency Transformer. Included as part of the installation of the new Emergency Transformer will be overvoltage protective relays in the control logic for the 4160 volt switchgear breakers from the new Emergency Transformer to the 4160 F and G buses (Breakers 1FS and 1GS). This transformer replacement will require the use of 52a contacts from breakers 1FS and 1GS in the new Overvoltage Relay Protection Scheme. Thus, by modifying the existing RHR and CS power monitoring logic, relays RHR & CS 27X3 1A/1B, and breakers 1FS/1GS and EG1/EG2 52a contacts are no longer required. As such, the District requests the removal of the two relays from the Cooper Nuclear Station (CNS) Technical Specifications.

The existing alignment and safety function of the relays is discussed below. The original GE design of the RHR and CS relay logics started the RHR and CS pumps differently depending on the power source (Figure 1 attached). If the SSST source was available, the RHR and CS pumps were block started onto the SSST. If the SSST was not available, but the ESST or the EDG was available, the RHR and CS pumps were sequentially started onto either of these power sources. The RHR & CS 27X3 1A/1B relays were originally included in the licensing of CNS with their function being to energize RHR relays RHR-REL-K2A/B and Core Spray relays CS-REL-K2A/B when a first level undervoltage (Reference 3) condition did not exist (no loss of voltage) on Buses 1A and 1B with the tie breakers closed, thus powering buses 1F and 1G from the SSST (Figure 1 attached). Energizing relays RHR-REL-K2A/B and CS-REL-K2A/B would bypass the sequential loading timers and result in a block start of the RHR and CS pumps when powered from the SSST. During the Safety System Functional Inspection (SSFI) of CNS conducted in 1987, the District committed to removing the block start capability and initiate sequential loading of the ECCS pumps on the SSST to improve voltage control on the critical buses. This essentially changed the GE relay logic to initiate sequential loading of the RHR and CS pumps on the availability of the SSST, the ESST or the EDG by reconfiguring the RHR-REL-K2A/B and CS-REL-K2A/B relays from bypassing the sequential loading timers to energizing the timers (Figure 2 attached). In this configuration, the RHR & CS 27X3 1A/1B relays initiated sequential loading when buses 1F and 1G were powered from buses 1A and 1B via the SSST. In 1989, the Second Level Undervoltage

System (Reference 1) was modified to extend second level undervoltage protection to the Emergency Transformer (Reference 2). The existing Bus 1F and 1G first level undervoltage system and the modified second level undervoltage system essentially provide continuous monitoring of all offsite power sources and aligns a power source with adequate voltage, thereby ensuring adequate voltage is available at Buses 1F and 1G prior to sequential loading of the ECCS pump motors from offsite sources. (4160 Buses 1F and 1G normally receive power from the SSST via buses 1A and 1B, with backup power directly provided by either the ESST or the EDG). If both the SSST and ESST have inadequate voltage, then the first or second level undervoltage system transfers buses 1F and 1G to the EDG's by inhibiting the close signal and inserting a trip signal to the offsite power supply breakers. The actual available power source to Buses 1F and 1G is not important since the undervoltage protection schemes ensure buses 1F and 1G can adequately power the RHR and CS pumps during sequential loading of the ECCS pump motors. Therefore, the need for the RHR & CS 27X3 1A/1B relays to monitor bus 1A and 1B voltage will no longer exist. The bus 1F and 1G first level and second level undervoltage relay systems provide a continuous monitor of the offsite power sources feeding buses 1F and 1G, and ensure adequate voltage at Buses 1F and 1G will be available prior to beginning sequential loading of the ECCS pump motors onto either the SSST, ESST, or EDG, whichever power source is available. (See Reference 1).

The existing RHR and CS relay logics utilize 52a contacts from breakers 1FS/1GS and EG1/EG2 in the RHR and CS pump start logic. The RHR and CS relay logic will be modified to perform the same safety function without the breaker 1FS and 1GS interlocks. The existing 52a contacts from breakers EG1 and EG2 (emergency diesel generator breakers) will also be removed without changing the safety function. The removal of the 1FS, 1GS, EG1, and EG2 52a contacts will simplify the RHR and CS pump start circuitry while providing the same safety function. With these contacts removed, the power monitoring logic of the RHR and CS logic continues to provide a sequential start of the RHR and CS pump motors when adequate voltage is available on Buses 1F and 1G (Figure 3 attached). The modification will simplify the RHR and CS relay logic, by removing a component in the logic scheme, and will not change the desired performance of the RHR, the CS or the EE systems.

In summary, when the RHR & CS 27X3 1A/1B relays were originally included in the licensing of CNS, their function was to initiate a block start signal of the ECCS

pumps onto the SSST when voltage was available on buses 1A and 1B and the tie breakers between buses 1A and 1F and 1B and 1G were closed during a design basis Loss of Coolant Accident (LOCA). However, as a result of commitments made in response to the SSFI at CNS, the District removed the block start loading of the SSST and incorporated Sequential Loading of the ECCS pumps from this power source. With the existing bus 1F and 1G first level undervoltage systems, and the modified second level undervoltage system the need for the RHR & CS 27X3 1A/1B relays to monitor bus 1A and 1B voltage no longer exist. The bus 1F and 1G first level undervoltage relay system (Reference 3) will ensure an immediate transfer of power sources on loss of voltage to buses 1F and 1G when powered from the SSST or ESST and initiate the sequential loading timer. The second level undervoltage relay system logic (References 1 & 2) will ensure buses 1F and 1G are powered either from offsite sources with adequate voltage or the EDG's. Additionally, the first and the second level undervoltage relays are currently controlled by the CNS Technical Specifications with attendant setpoints and surveillance frequencies, to ensure they are operable.

Therefore, the District requests that the CNS Technical Specifications be revised to remove relays RHR & CS 27X3 1A/1B from the protective instrumentation tables 3.2.B and 4.2.B located on pages 53, 55, 70, and 71 respectively.

DESCRIPTION OF CHANGES

The District requests that the CNS Technical Specifications be revised as described below:

- On Page 53, Table 3.2.B (Page 1), completely remove "Aux. Bus Low Voltage Relay 27X3 - 1A & 1B".
- On Page 55, Table 3.2.B (Page 3), completely remove "Bus 1A Low Voltage Aux. Relay 27 X 3/1A", and completely remove "Bus 1B Low Voltage Aux. Relay 27 X 3/1B".
- On Page 70, Table 4.2.B (Page 1), completely remove "Aux. Bus Low Voltage Relay 27X3 - 1A & 1B".
- On Page 71, Table 4.2.B (Page 2), completely remove "Low Voltage Relays 27 X 3/1A", and completely remove "Low Voltage Relays 27 X 3/1B".

SIGNIFICANT HAZARDS DETERMINATION

10 CFR 50.91(a)(1), requires that licensee requests for operating license amendments be accompanied by an evaluation of significant hazards posed by the issuance of the amendment. This evaluation is to be performed with respect to the criteria given in 10CFR50.92(c). The following analysis meets these requirements.

Evaluation of this Amendment with Respect to 10 CFR 50.92

The enclosed Technical Specification change is judged to involve no significant hazards based on the following:

1. Does the proposed license amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

   Evaluation

   The proposed license amendment will remove the Auxiliary Low Voltage Relays 27X3 1A/1B in both the Residual Heat Removal (RHR) and Core Spray (CS) systems. These relays are used to provide a start permissive signal to the RHR and CS pump motors if voltage is available at buses 1A and 1B respectively and the tie breakers between 1A and 1F are closed or the tie breakers between 1B and 1G are closed. During accident conditions emergency Buses 1F and 1G normally receive power from the SSST via buses 1A and 1B, with backup power directly provided by either the ESST or the EDG. Removal of these relays will not affect the RHR and CS system logic that requires adequate bus voltage be available prior to initiating the start sequence of the ECCS pumps. The existing plant configuration of the Bus 1F and 1G first and second level undervoltage relay logic schemes (References 1, 2, & 3) ensures that adequate voltage is available from either offsite power sources (SSST and ESST) or the onsite power source (EDG); therefore, adequate voltage at Bus 1F and 1G would be an acceptable condition to allow sequential loading. Identifying the actual power source (SSST, ESST, EDG) supplying power to buses 1F and 1G is no longer important since all available power sources can adequately power the RHR and CS pumps during sequential loading.

The safety function of the RHR and CS relay logic is to sense an accident condition, start the ECCS pumps, and open the injection valves at a preset pressure. The safety function of the RHR & CS 27X3 1A/1B relays is to monitor voltage on buses 1A and 1B, and tie breaker status for 1FS/1GS, and if adequate voltage is available and the tie breakers are closed to initiate a permissive signal to start the sequential loading timers for the ECCS pumps during a LOCA. The ECCS pumps are loaded on buses 1F and 1G which are powered from buses 1A and 1B via the SSST. However, this safety function is also provided by the first and second level undervoltage relay schemes, which ensure buses 1F and 1G are always powered from a source with adequate voltage. The safety function of the bus 1F and 1G first level undervoltage relay is to provide an immediate loadshed of the ECCS loads and a transfer to an available power source after detecting a loss of voltage. The second level undervoltage relay system ensures that an offsite power source or the onsite power source with adequate voltage is available to buses 1F and 1G to start and run the ECCS loads. The proposed removal of the RHR & CS 27X3 1A/1B relays and RHR and CS relay logic modifications will not change the operation, duration, or timing of the sequential loading logic for the ECCS loads. Therefore, the safety function of the RHR and CS relay logic is not affected by the removal of RHR & CS 27X3 1A and 1B relays.

The RHR and CS Emergency Core Cooling Systems will still perform their intended safety function as described in the Updated Safety Analysis Report (USAR) for the Loss of Coolant Accident with the approval of this proposed change. By maintaining the safety function of these ECCS systems CNS will continue to meet the criteria prescribed in the 10 CFR 50.46 and Appendix K analysis assuring that the CNS ECCS are capable of meeting their design bases and licensing requirements. The probabilities of a LOCA or other design basis accident will not be increased with approval of this proposed change because, the performance characteristics of the RHR and CS systems are not affected by this change, only a change in the logic scheme for initiating ECCS sequential loading is taking place. This is accomplished by using the bus 1F and 1G first level undervoltage relay system instead of the first level RHR & CS 27X3 1A/1B relays to monitor the emergency buses 1F and 1G for voltage when powered by the SSST to initiate sequential loading of the ECCS pump motors. Furthermore, the first and second level

undervoltage relays are currently controlled by the CNS Technical Specifications with attendant setpoints and surveillance frequencies, to ensure the components are operable.

The removal of the RHR & CS 27X3 1A/1B relays will simplify the RHR and CS pump start circuitry while providing the same safety function. The modified RHR and CS relay logic, will not change the desired performance or safety function of the RHR or CS systems. Therefore, based on the above discussions, the changes proposed in this amendment request do not represent a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility for a new or different kind of accident from any accident previously evaluated?

Evaluation

This proposed change removes auxiliary relays RHR & CS 27X3 1A/1B which monitor voltage on buses 1A and 1B, and tie breaker status for 1FS/1GS, and if adequate voltage is available and the tie breakers are closed would initiate a permissive signal to start the sequential loading timers for the ECCS pumps during a LOCA. The function of auxiliary relays RHR & CS 27X3 1A/1B is unnecessary since the safety function is performed by the existing first and second level undervoltage relay logics, which ensures that Buses 1F and 1G are powered from either offsite power source (SSST or ESST) with adequate voltage, or the onsite power source (EDG). The bus 1F and 1G first level undervoltage relay system provides an immediate loadshed of the ECCS loads and a transfer to an available power source after detecting a loss of voltage with a subsequent initiation signal to the sequential loading timer. The second level undervoltage relay system ensures an offsite or onsite power source with adequate voltage is available to buses 1F and 1G to start and run the ECCS loads. The monitoring of Bus 1A and 1B by these relays will not be required since the first and second level undervoltage logic monitors voltage at Bus 1F and 1G which directly powers the ECCS loads from one of the three available power sources (SSST, ESST, or EDG). Bus 1F and 1G normally receive power from Bus 1A and 1B respectively, therefore, monitoring Bus 1F and 1G to initiate any ECCS sequential loading would be

acceptable. Identifying the actual power source (SSST, ESST, EDG) to Buses 1F and 1G is no longer important since all power sources can adequately power the RHR and CS pumps during sequential loading. Therefore, the utilization of bus 1F and 1G voltage as a permissive signal to begin sequential loading of the ECCS pump motors does not create the possibility for a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in the margin of safety?

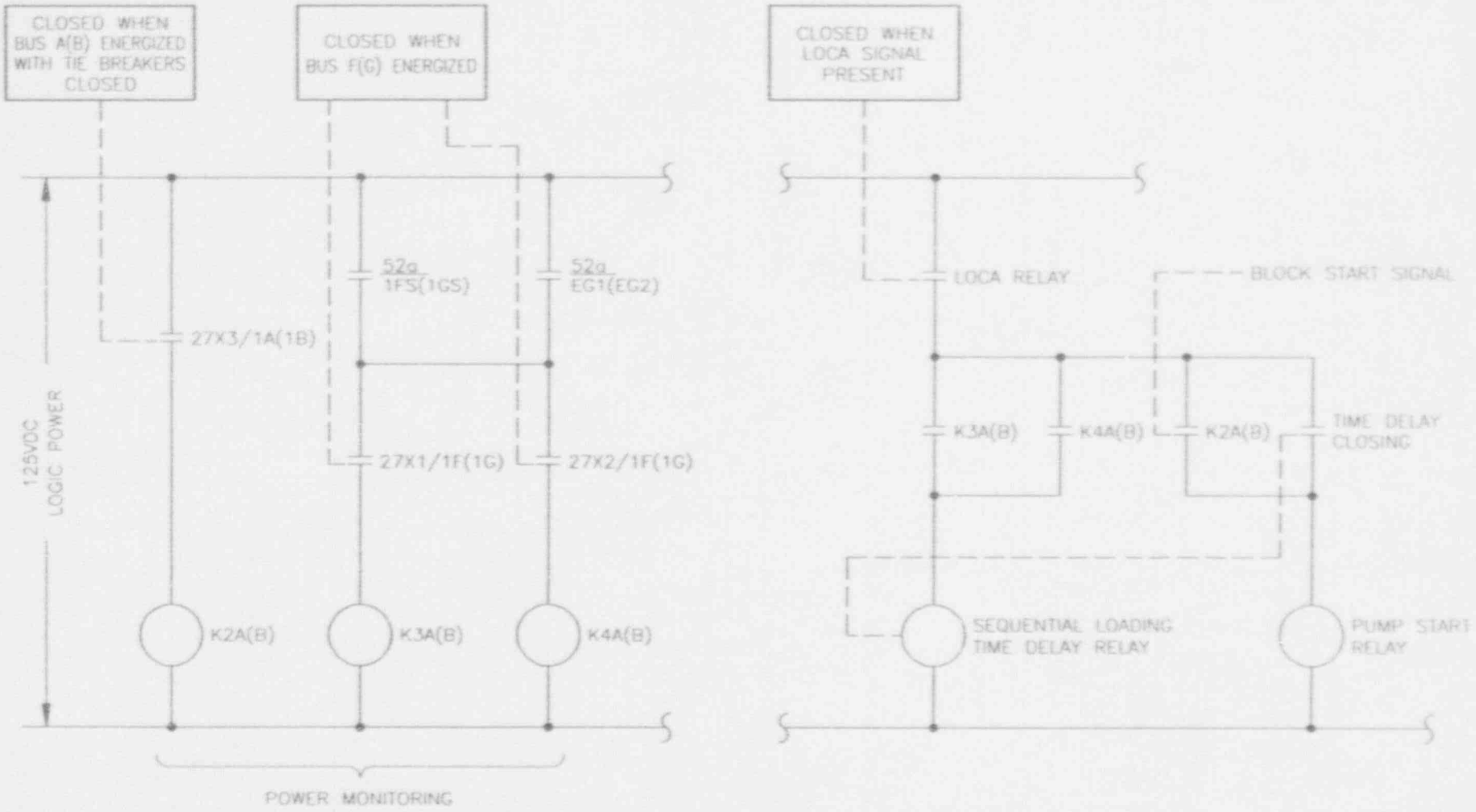
Evaluation

This proposed change to the Technical Specifications removes relays RHR & CS 27X3 1A/1B, that monitor available voltage on Buses 1A/1B and tie breaker status for 1FS/1GS. These relays are used to provide a start permissive signal to the RHR and CS pump motors if adequate voltage is available at buses 1A/1B respectively, and the 1FS/1GS tie breakers are closed. The adequacy of voltage at buses 1A and 1B provides an indirect indication of voltage at buses 1F and 1G, because buses 1F and 1G normally receive power from the SSST via buses 1A and 1B, respectively. The function that these relays performed will now be accomplished by the bus 1F and 1G first and second level undervoltage relay logic. The bus 1F and 1G first level undervoltage relay system provides an immediate loadshed of the ECCS loads and a transfer to an available power source with a subsequent initiation signal to the sequential loading timer after detecting a loss of voltage. The second level undervoltage relay system (References 1 & 2) ensures an offsite power source with adequate voltage is available to buses 1F and 1G to start and run the ECCS loads. Monitoring both Bus 1A/1B and 1F/1G is not needed or necessary, because buses 1F and 1G normally receive power from the SSST via buses 1A and 1B, with backup power directly provided by either the ESST or the EDG. By monitoring Bus 1F and 1G for adequate voltage to initiate sequential loading of the ECCS pump motors, the safety function of the RHR and CS logic systems is maintained. The RHR and CS Emergency Core Cooling Systems will still perform their intended safety function as described in the Updated Safety Analysis Report (USAR) for the Loss of Coolant Accident with the approval of this proposed change. By maintaining

the safety function of these ECCS systems CNS will continue to meet the criteria prescribed in the 10 CFR 50.46 and Appendix K analysis assuring that CNS ECCS are capable of meeting their design bases and licensing requirements. Therefore, the removal of the RHR & CS 27X3 1A/1B relays for RHR and CS pump start circuitry will not involve a significant reduction in the margin of safety.

CONCLUSION

The District has evaluated the proposed changes described above against the criteria of 10CFR50.92(c) in accordance with the requirements of 10CFR50.91(a)(1). This evaluation has determined that Proposed Change No. 116 to the CNS Technical Specification will not (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility for a new or different kind of accident from any accident previously evaluated, or (3) create a significant reduction in the margin of safety. Therefore, the District requests NRC approval of this proposed Technical Specification Change Number 116.

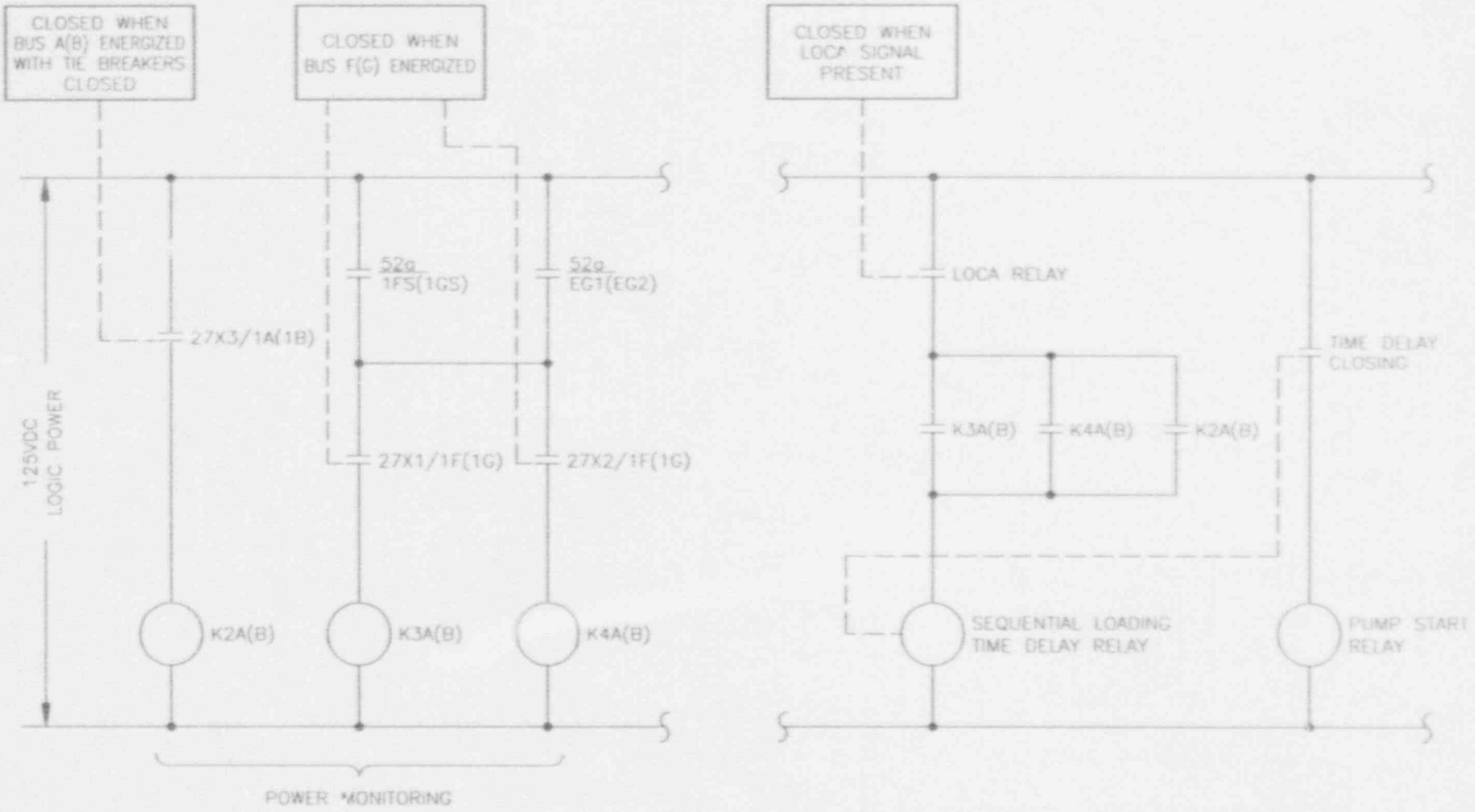


TYPICAL FOR RHR AND CS PUMPS

FIGURE 1

SIMPLIFIED ORIGINAL LOGIC WITH BLOCKSTART FROM SSST

NSD921231
Attachment 1

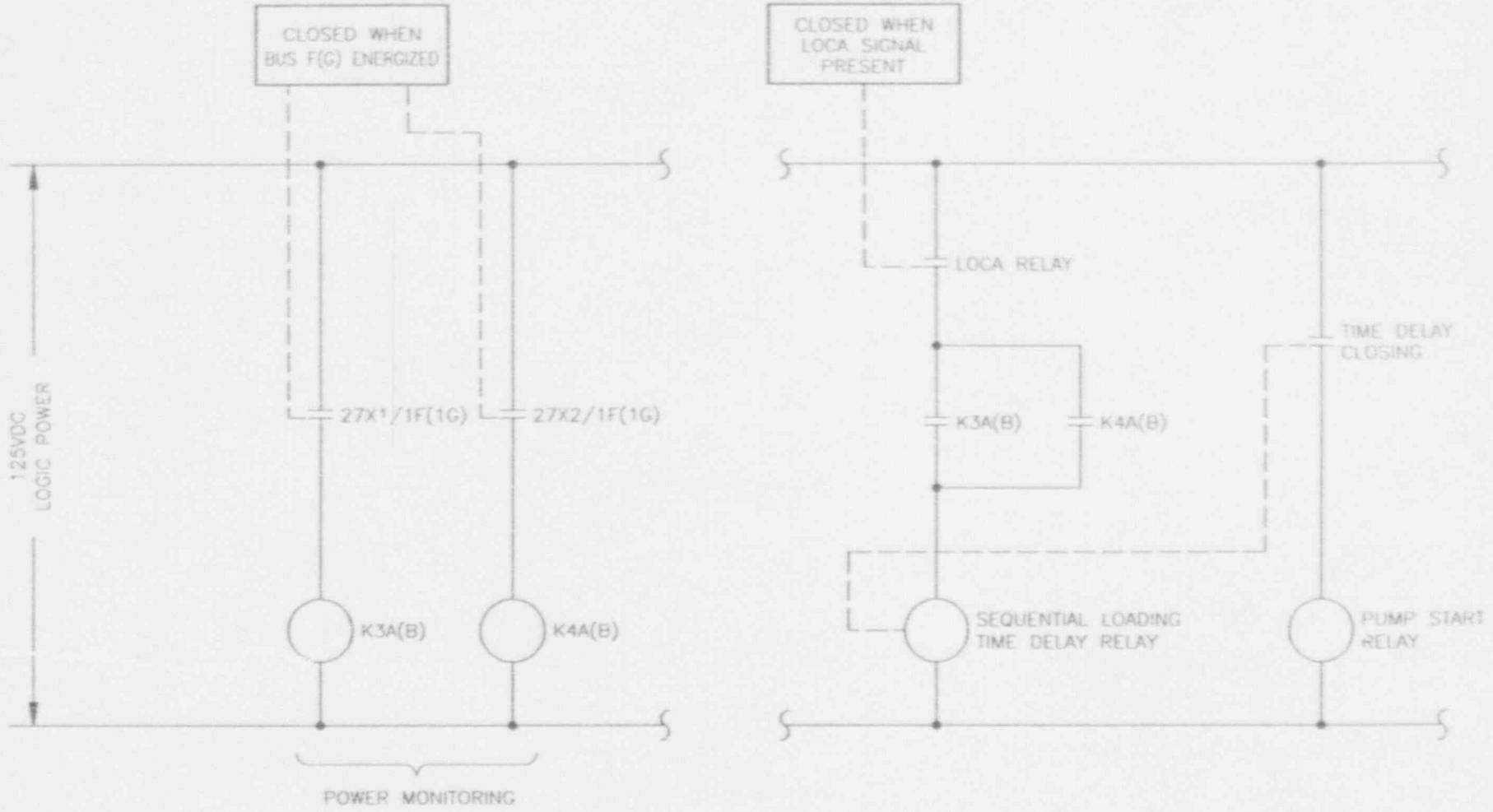


TYPICAL FOR RHR AND CS PUMPS

NSD921231
Attachment 1

FIGURE 2

SIMPLIFIED EXISTING LOGIC WITHOUT BLOCKSTART FROM SSST



TYPICAL FOR RHR AND CS PUMPS

NSD921231
Attachment 1

FIGURE 3

SIMPLIFIED PROPOSED LOGIC WITH
27X3/1A(1B) RELAYS REMOVED

COOPER NUCLEAR STATION
TABLE 3.2.B (PAGE 1)
CIRCUITRY REQUIREMENTS CORE SPRAY SYSTEM

Instrument	Instrument I.D. No.	Setting Limit	Minimum Number of Operable Components Per Trip System	Action Required When Component Operability Is Not Assured (1)
Reactor Low Water Level	NBI-LIS-72 A, B, C, & D	≥-145.5 of Indicated Level	2	A
Reactor Low Pressure	NBI-PS-52 A2 & C2, NBI-PIS-52 B & D (Switch #2)	≤450 psig	2	A
Drywell High Pressure	PC-PS-101, A, B, C & D	≤2 psig	2	A
Core Spray Pump Disch. Pressure	CS-PS-44, A & B CS-PS-37, A & B	100 ≤ P ≤ 165 psig	2	A
Core Spray Pump Time Delay	CS-TDR-K16 A & B	9≤T≤11 seconds	1	B
Low Voltage Relay Emerg. Bus	27X1 - 1F & 1G 27X2 - 1F & 1G	Loss of Voltage	1	B
Aux. Bus Low Voltage Relay	27X3 - 1A & 1B	Loss of Voltage	1	B
Pump Discharge Line Low Pressure	CM-PS-73, A & B	≥10 psig	(3)	D

COMPLETELY REMOVE

05/22/91

COOPER NUCLEAR STATION
TABLE 3.2.B (PAGE 1)
CIRCUITRY REQUIREMENTS CORE SPRAY SYSTEM

Instrument	Instrument I.D. No.	Setting Limit	Minimum Number of Operable Components Per Trip System	Action Required When Component Operability Is Not Assured (1)
Reactor Low Water Level	NBI-LIS-72 A, B, C, & D	≥-145.5 of Indicated Level	2	A
Reactor Low Pressure	NBI-PS-52 A2 & C2 NBI-PIS-52 B & D (Switch #2)	≤450 psig	2	A
Drywell High Pressure	PC-PS-101, A, B, C & D	≤2 psig	2	A
Core Spray Pump Disch. Pressure	CS-PS-44, A & B CS-PS-37, A & B	100 ≤ P ≤ 165 psig	2	A
Core Spray Pump Time Delay	CS-TDR-K16 A & B	9≤T≤11 seconds	1	B
Low Voltage Relay Emerg. Bus	27X1 - 1F & 1G 27X2 - 1F & 1G	Loss of Voltage	1	B
Pump Discharg. Line Low Pressure	CM-PS-73, A & B	≥10 psig	(3)	D

COOPER NUCLEAR STATION
TABLE 3.2.B (Page 3)
RESIDUAL HEAT REMOVAL SYSTEM (LPCI MODE) CIRCUITRY REQUIREMENTS

Instrument	Instrument I.D. No.	Setting Limit	Minimum Number of Operable Components Per Trip System (1)	Action Required When Component Operability Is Not Assured
RHR Pump Low Flow	RHR-dPIS-125 A & B	≥2500 gpm	1	A
Time Delays	RHR-TDR-K45, 1A&1B	4.25≤T≤5.75 min.	1	A
RHR Pump Start Time Delay	RHR-TDR-K75A & K70B	4.5≤T≤5.5 Sec.	1	A
	RHR-TDR-K75B & K70A	≤.5 sec.	1	A
RHR Heat Exchanger Bypass T.D.	RHR-TDR-K93, A & B	1.8≤T≤2.2 min.	1	B
RHR Crosstie Valve Position	RHR-LMS-8	Valve Not closed	(3)	E
Bus 1F Low Volt. Aux. Relays	27 X 1/1F	Loss of Voltage	1	B
	27 X 2/1F	Loss of Voltage	1	B
Bus 1G Low Volt. Aux. Relays	27 X 1/1G	Loss of Voltage	1	B
	27 X 2/1G	Loss of Voltage		
Pump Discharge Line	CM-PS-266	≥5 psig	(3)	D
	CM-PS-270	≥15 psig	(3)	D
Emergency Buses Undervoltage Relays (degraded voltage)	27/1F-2, 27/1FA-2	3880V ±52V	2	B
	27/1G-2, 27/1GB-2	7.5 second ±.8 sec. time delay	2	B
			1	B
Emergency Buses Loss of Voltage Relays	27/1F-1, 27/1FA-1, 27/1G-1, 27/1GB-1, 27/ET-1, 27/ET-2	2300V ±5% 0.0 ≤T≤ 5.0 sec. T = Time Delay	1	B
Emergency Buses Under-Voltage Relays Timers	27X7/1F, 27X7/1G,	5 second ±.5 sec.	1	B

COOPER NUCLEAR STATION
TABLE 4.2.B (Page 1)
CORE SPRAY SYSTEM TEST & CALIBRATION FREQUENCIES

Item	Item I.D. No.	Functional Test Freq.	Calibration Freq.	Instrument Check
Instrument				
1. Reactor Low Water Level	NBI-LIS-72, A,B,C, & D	Once/Month (1)	Once/3 Months	Once/Day
2. Reactor Low Pressure	NBI-PS-52, A1,A2,C1, & C2 NBI-PIS-52, B & D	Once/Month (1)	Once/3 Months	None
3. Drywell High Pressure	PC-PS-101, A,B,C, & D	Once/Month (1)	Once/3 Months	None
4. Core Spray Pump Disch. Press.	CS-PS-44, A & B CS-PS-37, A & B	Once/Month (1) Once/Month (1)	Once/3 Months Once/3 Months	None None
5. Core Spray Pump Time Delay	CS-TDR - K16, A & B	Once/Month (1)	Once/Oper. Cycle (4)	None
6. Emergency Bus Low Volt Relay	27X1 - 1F & 1G 27X2 - 1F & 1G	Once/Oper. Cycle Once/Oper. Cycle	N.A. N.A.	None None
7. Pump Disch. Line Low Press.	CM-PS-73, A & B	Once/3 Months	Once/3 Months	None
Logic (4) (6)				
1. Logic Power Monitor		Once/6 Months	N.A.	N.A.
2. Core Spray Initiation		Once/6 Months	N.A.	N.A.
3. Pump & Valve (Signal Override) Control		Once/6 Months	N.A.	N.A.

COOPER NUCLEAR STATION
TABLE 4.2.B (Page 2)
RHR SYSTEM TEST & CALIBRATION FREQUENCIES

	Item	Item I.D. No.	Functional Test Freq.	Calibration Freq.	Instrument Check
	Instrumentation				
1.	Drywell High Pressure	PC-PS-101, A, B, C & D	Once/Month (1)	Once/3 Months	None
2.	Reactor Low Water Level	NBI-LIS-72, A, B, C & D #1	Once/Month (1)	Once/3 Months	Once/Day
3.	Reactor Vessel Shroud Level	NBI-LITS-73, A & B #1	Once/Month (1)	Once/3 Months	Once/Day
4.	Reactor Low Pressure	RR-PS-128 A & B	Once/Month (1)	Once/3 Months	None
5.	Reactor Low Pressure	NBI-PS-52 A1,A2,C1, & C2 NBI-PIS-52 B & D	Once/Month (1)	Once/3 Months	None
6.	Drywell Press.-Containment Spray	PC-PS-119, A,B,C & D	Once/Month (1)	Once/3 Months	None
7.	RHR Pump Discharge Press.	RHR-PS-120, A,B,C & D	Once/Month (1)	Once/3 Months	None
8.	RHR Pump Discharge Press.	RHR-PS-105, A,B,C & D	Once/Month (1)	Once/3 Months	None
9.	RHR Pump Low Flow Switch	RHR-dPIS-125 A & B	Once/Month (1)	Once 3 Months	None
10.	RHR Pump Start Time Delay	RHR-TDR-K70, A & B	Once/Month (1)	Once/Oper. Cycle	None
11.	RHR Injection Valve Close T.D.	RHR-TDR-K45 1A & 1B	Once/Month (1)	Once/Oper. Cycle	None
12.	RHR Pump Start Time Delay	RHR-TDR-K75, A & B	Once/Month (1)	Once/Oper. Cycle	None
13.	RHR Heat Exchanger Bypass T.D.	RHR-TDR-K93, A & B	Once/Month (1)	Once/Oper. Cycle	None
14.	RHR Cross Tie Valve Position	RHR-LMS-8	Once/Month (1)	N.A.	
15.	Low Voltage Relays	27 x 2/1F, 27 X 2/1G	(7)		None
16.	Low Voltage Relays	27 X 1/1F, 27 X 1/1G	(7)		None
17.	Pump Disch. Line Press. Low	CM-PS-266, CM-PS-270	Once/3 Months	Once/3 Months	None
18.	Emergency buses Undervoltage Relays (Degraded Voltage)	27/1F-2, 27/1FA-2, 27/1G-2, 27/1GB-2	Once/Month	Once/18 Months	Once/12 hrs.
19.	Emergency Buses Loss of Voltage Relays	27/1F-1, 27/1FA-1, 27/1G-1, 27/1GB-1, 27/ET-1, 27/ET-2	Once/Month	Once/18 Months	Once/12 hrs.
20.	Emergency Buses Undervoltage Relays Timers	27X7/1F, 27X7/1G	Once/Month	Once/18 Months	None

COOPER NUCLEAR STATION
TABLE 3.2.B (Page 3)
RESIDUAL HEAT REMOVAL SYSTEM (LPCI MODE) CIRCUITRY REQUIREMENTS

Instrument	Instrument I.D. No.	Setting Limit	Minimum Number of Operable Components Per Trip System (1)	Action Required When Component Operability Is Not Assured
RHR Pump Low Flow	RHR-dPIS-125 A & B	≥500 gpm	1	A
Time Delays	RHR-TDR-K45, 1A&1B	4.25≤T≤5.75 min.	1	A
RhR Pump Start Time Delay	RHR-TDR-K75A & K70B	4.5≤T≤5.5 Sec.	1	A
	RHR-TDR-K75B & K70A	≤ 5 sec.	1	A
RHR Heat Exchanger Bypass T.D.	RHR-TDR-K93, A & B	1.8≤T≤2.2 min.	1	B
RHR Crosstie Valve Position	RHR-LMS-8	Valve Not closed	(3)	E
Bus 1A Low Volt. Aux. Relay	27 X 3/1A	Loss of Voltage	1	B
Bus 1B Low Volt. Aux. Relay	27 X 3/1B	Loss of Voltage	1	B
Bus 1F Low Volt. Aux. Relays	27 X 1/1F	Loss of Voltage	1	B
	27 X 2/1F	Loss of Voltage	1	B
Bus 1G Low Volt. Aux. Relays	27 X 1/1G	Loss of Voltage	1	B
	27 X 2/1G	Loss of Voltage		
Pump Discharge Line	CM-PS-266	≥5 psig	(3)	D
	CM-PS-270	≥15 psig	(3)	D
Emergency Buses Undervoltage Relays (degraded voltage)	27/1F-2, 27/1FA-2	3880V ±52V	2	B
	27/1G-2, 27/1GB-2	7.5 second ±.8 sec. time delay	2	B
			1	B
Emergency Buses Loss of Voltage Relays	27/1F-1, 27/1FA-1, 27/1G-1, 27/1GB-1, 27/ET-1, 27/ET-2	2300V ±5% 0.0 ≤T≤ 5.0 sec. T = Time Delay	1	B
Emergency Buses Under-Voltage Relays Timers	27X7/1F, 27X7/1G,	5 second ±.5 sec.	1	B

COMPLETELY REMOVE

07/17/91

COOPER NUCLEAR STATION
TABLE 4.2.B (Page 1)
CORE SPRAY SYSTEM TEST & CALIBRATION FREQUENCIES

Item	Item I.D. No.	Functional Test Freq.	Calibration Freq.	Instrument Check
Instrument				
1. Reactor Low Water Level	NBI-LIS-72, A,B,C, & D	Once/Month (1)	Once/3 Months	Once/Day
2. Reactor Low Pressure	NBI-PS-52, A1,A2,C1, & C2 NBI-PIS-52, B & D	Once/Month (1)	Once/3 Months	None
3. Drywell High Pressure	PC-PS-101, A,B,C, & D	Once/Month (1)	Once/3 Months	None
4. Core Spray Pump Disch. Press.	CS-PS-44, A & B	Once/Month (1)	Once/3 Months	None
	CS-PS-37, A & B	Once/Month (1)	Once/3 Months	None
5. Core Spray Pump Time Delay	CS-TDR - K16, A & B	Once/Month (1)	Once/Oper. Cycle (4)	None
6. Emergency Bus Low Volt Relay	27X1 - 1F & 1G	Once/Oper. Cycle	N.A.	None
	27X2 - 1F & 1G	Once/Oper. Cycle	N.A.	None
7. Aux. Bus Low Voltage Relay	27X3 - 1A & 1B	Once/Oper. Cycle	N.A.	None
8. Pump Disch. Line Low Press.	CM-PS-73, A & B	Once/3 Months	Once/3 Months	None
Logic (4) (6)				
1. Logic Power Monitor		Once/6 Months	N.A.	N.A.
2. Core Spray Initiation		Once/6 Months	N.A.	N.A.
3. Pump & Valve (Signal Override) Control		Once/6 Months	N.A.	N.A.

-10-

COMPLETELY REMOVE

03/27/91

COOPER NUCLEAR STATION
TABLE 4.2.B (Page 2)
RHR SYSTEM TEST & CALIBRATION FREQUENCIES

	Item	Item I.D. No.	Functional Test Freq.	Calibration Freq.	Instrument Check
	Instrumentation				
1.	Drywell High Pressure	PC-PS-101, A, B, C & D	Once/Month (1)	Once/3 Months	None
2.	Reactor Low Water Level	NBI-LIS-72, A, B, C & D #1	Once/Month (1)	Once/3 Months	Once/Day
3.	Reactor Vessel Shroud Level	NBI-LITS-73, A & B #1	Once/Month (1)	Once/3 Months	Once/Day
4.	Reactor Low Pressure	RR-PS-128 A & B	Once/Month (1)	Once/3 Months	None
5.	Reactor Low Pressure	NBI-PS-52 A1,A2,C1, & C2 NBI-PIS-52 B & D	Once/Month (1)	Once/3 Months	None
6.	Drywell Press.-Containment Spray	PC-PS-119, A,B,C & D	Once/Month (1)	Once/3 Months	None
7.	RHR Pump Discharge Press.	RHR-PS-120, A,B,C & D	Once/Month (1)	Once/3 Months	None
8.	RHR Pump Discharge Press.	RHR-PS-105, A,B,C & D	Once/Month (1)	Once/3 Months	None
9.	RHR Pump Low Flow Switch	RHR-dPIS-125 A & B	Once/Month (1)	Once 3 Months	None
10.	RHR Pump Start Time Delay	RHR-TDR-K70, A & B	Once/Month (1)	Once/Oper. Cycle	None
11.	RHR Injection Valve Close T.D.	RHR-TDR-K45 1A & 1B	Once/Month (1)	Once/Oper. Cycle	None
12.	RHR Pump Start Time Delay	RHR-TDR-K75, A & B	Once/Month (1)	Once/Oper. Cycle	None
13.	RHR Heat Exchanger Bypass T.D.	RHR-TDR-K93, A & B	Once/Month (1)	Once/Oper. Cycle	None
14.	RHR Cross Tie Valve Position	RHR-LMS-8	Once/Month (1)	N.A.	
15.	Low Voltage Relays	27 X 3/1A	(7)		None
16.	Low Voltage Relays	27 X 3/1B	(7)		None
15 17.	Low Voltage Relays	27 x 2/1F, 27 X 2/1G	(7)		None
16 18.	Low Voltage Relays	27 X 1/1F, 27 X 1/1G	(7)		None
17 19.	Pump Dis h. Line Press. Low	CM-PS-266, CM-PS-270	Once/3 Months	Once/3 Months	None
18 20.	Emergency buses Undervoltage Relays (Degraded Voltage)	27/1F-2, 27/1FA-2, 27/1G-2, 27/1GB-2	Once/Month	Once/18 Months	Once/12 hrs.
19 21.	Emergency Buses Loss of Voltage Relays	27/1F-1, 27/1FA-1, 27/1G-1, 27/1GB-1, 27/ET-1, 27/ET-2	Once/Month	Once/18 Months	Once/12 hrs.
20 22.	Emergency Buses Undervoltage Relays Timers	27X7/1F, 27X7/1G	Once/Month	Once/18 Months	None

Note changes

COMPLETELY REMOVE

-71-

10/10/91