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August 2, 1984

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

Subject: Byron Station Units 1 and 2
Braidwood Station Units 1 and 2
Additional FSAR Information
NRC Docket Nos. 50-454/455 and
50-456/457

Reference (a): B. J. Youngblood letter to D. L. Farrar dated July 25, 1984

Dear Mr. Keppler:

This letter provides advance copies of responses to various Fire Protection questions for your immediate review to support our Byron Unit 1 Fuel Load. Enclosed are responses to FSAR Questions 10.57, 10.63, 10.64, 10.65 and 10.66.

Our revised response to Question 10.57 is being provided as a result of our revised safe shutdown analysis. Questions 10.63, 64, 65, and 66 respond to Item No. 5 of Reference (a). Our Byron/Braidwood FSAR will be amended to include this information in the next Amendment.

Please address any questions that you or your staff may have concerning this matter to this office.

One signed original and fifteen copies of this letter with Attachments are provided for your use.

Very truly yours,

B Rybak for

E. Douglas Swartz
Nuclear Licensing Administrator

Attachment
cc: J. G. Keppler - RIII
RIII Inspectors - B/B

9053N

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QUESTION 010.57

"Table 2.4-4a of the safe shutdown analysis identifies safe shutdown instrumentation. However, the analysis indicates that following a fire in a number of separate plant fire zones, redundant channels of certain of these instruments which must be available during hot shutdown will be lost. This is unacceptable. It is our position that at least one channel of instrumentation essential for safe shutdown be protected from fire damage in accordance with Section III.G.2 of Appendix R or an alternate be provided which meets the requirements of Section III.L of Appendix R. The backup instrumentation justification discussion of these fire zones in the safe shutdown analysis does not comply with Section III.L. Instrumentation affected includes source range neutron flux monitoring, steam generator wide range level indication, reactor coolant hot and cold leg indication and auxiliary feedwater flow indication in the following areas:

a. Control room

b. Lower cable spreading room

c. Auxiliary electrical equipment room

d. Auxiliary building general Area, elevation 383'-0"

e. Radwaste and remote shutdown control room; and

f. Radwaste drumming station and tunnel."

RESPONSE

A discussion of each of the areas listed in the question follows. Note that the lower cable spreading rooms are divided into five fire zones. A discussion is provided for each zone. Table Q10.57-1 lists the number of channels of instrumentation affected in each fire zone for each of the instrumentation types listed in the question except auxiliary feedwater flow indication. It has been determined that auxiliary feedwater flow indication is not required for safe shutdown in the event of a fire. Also, the list in Table Q10.57-1 does not include new indication for some of these parameters added in response to staff positions. These are described in the applicable portions of Section 2.4 of the Fire Protection Report. Reference to specific subsections which may be applicable are provided under the discussions for each fire zone which follows.

a. Control Room (Fire Zone 2.1-0)

Both channels of source range neutron monitoring instrumentation would be affected by a fire in this zone. This is due to the fact that the neutron monitoring system panel 1PM07J is located in the control room. It is the Applicant's position, however, that the source range neutron monitoring instruments are not required to achieve or maintain the plant in the hot standby or hot shutdown conditions. In the event of a fire in this zone, the operators would have sufficient time to scram the reactor prior to evacuating the room. Once the control rods are inserted into the core, sufficient negative reactivity has been inserted to ensure subcriticality while hot standby or hot shutdown conditions are maintained. Should it be necessary to determine or verify the available shutdown margin, a primary coolant system sample can be drawn and analyzed for boron concentration. This operation can be performed onsite by station personnel.

Thus, no reliance is placed on the neutron monitoring system instrumentation until actions are begun to take the plant to cold shutdown.

The Applicant believes this position meets Appendix R requirements. In particular, Section III.L.1.a, which states that alternative shutdown capability shall be capable of achieving and maintaining subcriticality, is met by manually scramming the reactor, since subcriticality is assured by inserting the control rods into the core and maintaining hot standby conditions, Section III.L.2.d, which states that direct indication of process variables necessary to perform and control the reactivity control function shall be provided, is met because once the control rods have been inserted into the core, direct indication of neutron flux is not required to control reactivity while hot standby is maintained. Credit is taken for repairing fire damage to neutron monitoring system cables prior to initiating cold shutdown actions, as per Appendix R.

In summary, the Applicant's position meets Appendix R and protection of neutron monitoring system cables from fire damage is not warranted.

Nevertheless, in response to a staff position, the Applicant has agreed to provide indication of source range neutron flux independent of this zone. Refer to Subsections 2.4.2.4 and 2.4.2.21 of the Fire Protection Report for a detailed description of the modifications provided.

b. Lower Cable Spreading Rooms:

1) Fire Zone 3.2A-1 - This zone does not contain any of the instrumentation cable listed for this question.

2) Fire Zone 3.2B-1 - This zone contains cables from both trains of the neutron monitoring system. Refer to part a of this response for the Applicant's position on this system. Cables for all four wide range reactor coolant cold leg RTD's are routed through this zone. As discussed in FPR Subsection 2.4.2.8, additional cold leg temperature indication will be provided independent of this zone at the fire hazards panel. In the interim, operator training will allow use of steam generator pressure indication to infer reactor coolant cold leg temperature. Cables for not more than one train out of two of instrumentation for other parameters listed in this question are routed through this zone. Thus, additional fire protection features are not required for this zone.

3) Fire Zone 3.2C-1 - This zone contains cables from both trains of the neutron monitoring system. Refer to part a of this response for the Applicant's position on this system. Cables for all four wide range reactor coolant cold leg RTD's are routed through this zone (refer to part b.2 of this response). Cables for not more than one train out of two of instrumentation for other parameters listed in this question are routed through this zone. Thus, additional fire protection features are not required for this zone.

4) Fire Zone 3.2D-1 - Cables for not more than one train out of two of instrumentation for parameters listed in this question are routed through this zone. Thus, additional fire protection features are not required for this zone.

5) Fire Zone 3.2E-1 - Cables for all four channels of wide range reactor coolant hot leg indication and cables for Division 11 incore thermocouples are routed through this zone. However, Division 12 incore thermocouple indication remains available. Cables for not more than one train out of two of instrumentation for other parameters listed in this question are routed through this zone. Thus, additional fire protection features are not required for this zone.

c. Auxiliary Electric Equipment Room (Fire Zone 5.5-1)

Modifications to provide essential instrumentation independent of this zone are described in Subsection 2.4.2.21 of the Fire Protection Report.

d. Auxiliary Building General Area - Elevation 383 feet 0 inch (Fire Zone 11.4-0)

Only one out of two channels of the neutron monitoring system are present in this zone. Cables for all four channels of steam generator wide range level and reactor coolant hot and cold leg temperature instrumentation are present, however, these cables serve indication at the remote shutdown panel only. Indication for these parameters is available in the control room and the fire hazards panel. Thus, additional fire protection features are not required for this zone.

e. Radwaste and Remote Shutdown Control Rooms (Fire Zone 11.4C-0)

The discussion under part d of this question for Fire Zone 11.4-0 is also applicable for this fire zone.

f. Radwaste Drumming Station and Tunnel (Fire Zone 14.1-0)

The fire zone boundary of this zone is redefined in the revised Fire Protection Report. The original boundary was arbitrary and did not conform to plant structural features. The new boundary follows a structural concrete wall. As a result of this change, the area on elevation 383 feet 0 inch roughly between column-rows 21 and 25 and P to Q was deleted from Fire Zone 14.1-0 and added to Fire Zone 14.4-0. This area included the cables from the safe shutdown instrumentation listed in this question. Fire Zone 14.1-0 now contains no safe shutdown cables. Refer to part e of this question for a resolution of this question for Fire Zone 11.4-0.

TABLE Q10.57-1

INSTRUMENTATION CHANNELS ROUTED THROUGH FIRE ZONES

	AREA	FIRE ZONE	INSTRUMENTATION: NEUTRON MONITORING	INSTRUMENTATION: SG WIDE RANGE LEVEL	INSTRUMENTATION: RC HOT AND COLD LEG TEMPERATURE
a.	Control Room	2.1-0	SR: 2/2	---	---
b.	Lower Cable Spreading Rooms	3.2A-1	---	---	---
		3.2B-1	SR: 2/2	2/4	Cold Leg: 4/4
		3.2C-1	SR: 2/2	---	Cold Leg: 4/4
		3.2D-1	---	2/4	Cold Leg: 4/4**
		3.2E-1	SR: 1/2	2/4	Hot Leg: 4/4
c.	AEER	5.5-1	SR: 2/2 (Power Sources)	4/4	Hot Leg: 4/4 Cold Leg: 4/4
d.	Aux. Bldg. El. 383 ft 0 in.	11.4-0	SR: 1/2	4/4**	Hot Leg: 4/4** Cold Leg: 4/4**
e.	RSP	11.4C-0	SR: 1/2	4/4**	Hot Leg: 4/4** Cold Leg: 4/4**
f.	Radwaste	14.1-0	(1/2)*	(4/4)*	---

* Due to redefinition of fire zone boundaries, Fire Zone 14.1-0 now has no safe shutdown cables routed through it.

**Remote shutdown panel indication only.

QUESTION 010.63

"The inspection of Byron, Unit 1 indicated that the information provided in the fire protection report may not reflect as built condition. For as built conditions, provide a list of all fire areas containing redundant safe shtudown equipment or cabling (power, control and instrumentation) including associated circuits, for each of the Byron/Braidwood units."

RESPONSE

The safe shutdown analysis contained in Section 2.4 of the Fire Protection Report has been revised (Amendment 3) to reflect the as-built condition of Byron Unit 1. All fire areas containing redundant safe shutdown equipment or cabling are addressed in the safe shutdown analysis.

The safe shutdown analyses for Byron Unit 2 and Braidwood Units 1 and 2 have not yet been performed; however, these analyses will reflect the as-built condition of the respective units.

QUESTION 010.64

"The inspection of Byron, Unit 1 and the fire protection report indicate extensive reliance on manual operations for safe shutdown; however, procedures have not been developed. For each fire area of the Byron/Braidwood units, provide a summary of the post-fire operator actions necessary for safe shutdown and the location of the operator actions. For fire areas containing redundant safe shutdown equipment for two units or shared equipment, address the actions necessary for safe shutdown of both units."

RESPONSE

Refer to revised Subsection 2.4.1.5 of the Fire Protection Report (Amendment 3), which responds to this question for Byron-Unit 1. A safe shutdown analysis for Byron-Unit 2 has not yet been performed. The Unit 2 safe shutdown analysis will address the last part of this question regarding manual actions required for safe shutdown of both units. This analysis is expected to be available by January 1985.

QUESTION 010.65

"The response to Question 10.55 provided by Amendment 39, regarding operator response to plant transients caused by fire-induced spurious operation of equipment does not provide sufficient detail. For each fire area, identify the plant transients that could be initiated by fire-induced spurious operation of equipment. Identify the instrumentation available to the operator to assess the transient and necessary corrective actions to be taken. Identify how the corrective actions would be integrated into the shutdown actions identified for Question 10.64."

RESPONSE

Valves are the only plant equipment considered subject to spurious operation, as a result of a fire, which could impact the safe shutdown capability of the plant. Spurious starting of pumps due to a fire is not considered because there is no adverse safety impact of a pump starting.

An analysis has been performed to identify those valves which are subject to spurious actuation due to a fire and could impact safe shutdown capability.

Assumptions

The assumptions made in performing the analysis were as follows:

a. Appendix R definitions of safe shutdown capability were used;

b. Fire occurs in only one fire zone of the plant;

c. Spurious actuation of a valve results from hot short or open to power or control cables;

d. Only one spurious actuation occurs per single fire;

e. Spurious actuation plus failure of identical redundant components were not considered because separation of redundant equipment is addressed in Section 2.4 of the Fire Protection Report; and

f. Valves with power locked out were not considered because a hot short of the control cables would not cause actuation.

System Review

Each plant system's piping and instrumentation diagram was reviewed to determine the effect of the worst case single spurious valve actuation. (Pressurizer PORV's, block valves, and RHR suction valves have been addressed in Subsection 2.4.3 of the Fire Protection Report.)

As a result of the system review, 17 valves were identified whose fire-induced actuation could affect safe shutdown capability of the plant. These valves are as follows:

a. Auxiliary feedwater pump discharge test valves 1AF004A and 1AF004B; spurious operation closes valve A (B) and results in loss of AFW train A(B) flow.

b. Fire protection system containment isolation valves 1FP010 and 1FP011; spurious operation closes either valve and results in loss of water supply for hose stations inside containment.

c. Essential service cooling tower hot water bypass valves 0SX162A, 0SX162B, 0SX162C, and 0SX162D; spurious operation opens valves A or C (B or D) resulting in reduced cooling of essential service water train A (B).

d. Essentia service water pump suction valves 1SX001A and 1SX001B; spurious operation closes valve A(B) resulting in loss of ESW train A(B).

e. RCFC essential service water inlet valves 1SX016A and 1SX016B; spurious operation closes valve A(B) resulting in loss of RCFC train A(B).

f. RCFC essential service water outlet valves 1SX027A and 1SX027B; spurious operation closes valve A(B) resulting in loss of RCFC train A(B).

g. Motor-driven auxiliary feedwater pump oil cooler outlet valve 1SX101A; spurious operation closes valve resulting in loss of lube oil cooling.

h. Suction valve 1SX173 for engine-driven cooling water pump for diesel driven auxiliary feedwater pump; spurious operation closes valve resulting in loss of oil and pump cubicle cooling.

i. Diesel-driven auxiliary feedwater pump cooler outlet valve 1SX178; spurious operation closes valve resulting in loss of oil and pump cubicle cooling.

Table Q10.65-1 lists the cables required for each of the above valves and Table Q10.65-2 gives the cable routing by fire zone for these valves. (Cable listings and routings for valves 0SX162C and 0SX162D are not given since these are Unit 2 valves.

However, the evaluation which follows addresses these valves as well as the Unit 1 valves 0SX162A and 0SX162B.)

Evaluation

The cable routings for the 17 valves listed above (except 1FP010 and 1FP011) were reviewed against the cable routings for other safe shutdown components to determine if a single fire could result in a spurious valve actuation and a simultaneous loss of function of redundant safe shutdown components such that safe shutdown capability would be impaired. The results of this review are given in Table Q10.65-3 which is a tabulation of the fire zones for which safe shutdown capability could be impaired. Valves 1FP010 and 1FP011 were not reviewed in the above manner since the spurious actuation alone results in the worst case effect on safe shutdown capability. Fire zones in which a fire could cause spurious operation of these valves are those zones listed in Table Q10.65-2.

Disposition of Results

As shown in Tables Q10.65-2 and Q10.65-3, there are numerous fire zones for which spurious actuation of any of the 17 valves identified previously due to a single fire could affect the safe shutdown capability of the plant. The following discussion addresses the actions that will be taken in regard to these valves.

a. Valves 1AF004A and 1AF004B

In the event of a loss of all AFW flow there are numerous control room indications that indicate a loss of feedwater flow to the steam generators and AFW pump trouble. Also, there are existing procedures available to cover this event. In particular, one or more of the following procedures could be applicable for a loss of AFW flow:

1. 1BEP-0, "Reactor Trip or Safety Injection";

2. 1BEP-0.1, "Reactor Trip Recovery"; and

3. 1BFR-H.1, "Response to Loss of Secondary Heat Sink."

Furthermore, in the event of a loss of AFW flow, there is adequate time for the operators to diagnose the problem and determine which procedure to follow.

b. Valves 1FP010 and 1FP011

These valves are normally open energized valves, thus they fail closed on loss of power. The fire protection line served by these valves is only required in the event of a fire inside containment. The cables for outboard isolation valve 1FP010 are routed outside containment and, therefore, a fire inside containment could not spuriously close this valve. Spurious closure of 1FP010 or 1FP011 due to a fire outside containment is not a problem since it would not be necessary to supply water to hose stations inside containment.

Since a fire inside containment could cause spurious closure of inboard isolation valve 1FP011, the valve will either be modified to allow manual reopening, or the valve will be replaced with a check valve.

Assuming that 1FP011 is modified for manual operation, it has been verified that this valve is in an accessible location. Also, 1FP011 can be reached by a fire hose brought in from outside containment through the personnel hatch. Thus, in the event of a fire in the immediate location of 1FP011, the fire hose could be used to cool off the valve and surrounding area prior to manually operating 1FP011.

If the present valve is replaced with a check valve, spurious actuation due to a fire could not occur.

c. Valves 0SX162A, 0SX162B, 0SX162C, and 0SX162D

Spurious opening of any of these valves would be detected by a gradual rise in essential service water temperature. Sufficient time (at least 30 minutes) is available to allow for manual valve closure.

d. Valves 1SX001A and 1SX001B

Circuit breakers supplying power to these valves will be deenergized during normal plant operation. This will preclude spurious operation of these valves.

e. Valves 1SX016A, 1SX016B, 1SX027A, and 1SX027B

The worst case scenario involving these valves assumes that a fire in the auxiliary building damages the

power cables to one train of RCFC fans and causes a spurious closure of either the inlet or outlet valve for the essential service water supply to the redundant RCFC train. This would result in a complete loss of RCFC function until the valve could be manually reopened. Instrumentation available to the operator to determine that this situation exists includes containment temperature indication and RCFC status indication in the main control room. It has been verified that the inlet and outlet valves are accessible for manual operation.

In addition, a calculation is in progress for the loss of all RCFC's (conservatively assuming that the reactor continues to operate at full power) to determine if sufficient time (at least 30 minutes) is available to allow for manual operation prior to the time at which the containment temperature reaches the equipment environmental qualification temperature (325° F).

f. Valves 1SX101A, 1SX173, and 1SX178

The consequence of the worst case scenario involving spurious operation of any one of these valves is a loss of all auxiliary feedwater flow. Refer to item a. above.

TABLE Q10.65-1

POWER AND CONTROL CABLES FOR
VALVES WHOSE SPURIOUS ACTUATION
COULD AFFECT SAFE SHUTDOWN CAPABILITY

CABLE NO.	DESCRIPTION	TYPE*
Valve 1AF004A		
1AF197	Junction Box 1JB795A to valve limit switch (close)	C
1AF198	1JB795A to valve solenoid	C
1AF199	1JB795A to valve limit switch (open)	C
1AF200	1JB795A to Protection System Cabinet 1PA09J	C
1AF201	1JB795A to Handswitch 1HS-AF121	C
1AF202	1JB795A to 125-Vdc ESF Distribution Panel 111 (1DC05EA)	C
1AF311	1JB795A to Valve Accumulator Pressure Switch 1PS-AF156A	C
Valve 1AF004B		
1AF204	Junction Box 1JB796A to valve limit switch (close)	C
1AF205	1JB796A to valve solenoid	C
1AF206	1JB796A to valve limit switch (open)	C
1AF207	1JB796A to Protection System Cabinet 1PA10J	C
1AF208	1JB796A to Handswitch 1HS-AF122	C
1AF209	1HS-AF122 to 125-Vdc Distributiuon Panel 112 (1DC06EA)	C
1AF312	1JB796A to Valve Accumulator Pressure Switch 1PS-AF156B	C

TABLE Q10.65-1 (Cont'd)

CABLE NO.	DESCRIPTION	TYPE*
Valve 1FP010		
1FP035	Containment Isolation Panel 1PM11J to Junction Box 1JB618A	C
1FP036	1JB618A to valve solenoid	C
1FP037	1JB618A to valve limit switch (open)	C
1FP038	1JB618A to valve limit switch (close)	C
1FP039	1PM11J to Safeguards Test Cabinet 1PA12J	C
1FP040	1PA12J to Protection System Cabinet 1PA10J	C
Valve 1FP011		
1FP030	Containment Isolation Panel 1PM11J to Penetration 1SI03E	C
1FP031	1SI03E to Junction Box 1JB662R	C
1FP032	Junction Box 1JB238R to valve	C
1FP033	1JB238R to valve limit switch (open)	C
1FP034	1JB238R to valve limit switch (close)	C
1FP458	1JB662R to 1JB238R	C
Valve 0SX162A		
1SX155	480-Vac ESW Cooling Tower MCC 131Z1 (1AP93E) to valve	P
1SX156	1AP93E to valve limit switch	C
1SX157	1AP93E to handswitch at MCB OPM01J	C
1SX158	Handswitch at MCB OPM01J to Temperature Switch OTS-SX090	C
1SX345	Handswitch at MCB OPM01J to 4160-Vac ESF Switchgear Bus 141 (1AP05EB)	C

TABLE Q10.65-1 (Cont'd)

CABLE NO.	DESCRIPTION	TYPE*
Valve OSX162B		
1SX167	480-Vac ESW Cooling Tower MCC 132Z1 (1AP92E) to valve	?
1SX168	1AP92E to valve limit switch	C
1SX169	1AP92E to handswitch at MCB OPM01J	C
1SX170	Handswitch at MCB OPM01J to Temperature Switch 0TS-SX091	C
1SX346	Handswitch at MCB OPM01J to 4160-Vac ESF Switchgear Bus 142 1AP06EB	C
Valve 1SX001A		
1SX031	480-Vac MCC 131X3 (1AP22E) to valve	P
1SX032	1AP22E to valve limit switch	C
1SX033	1AP22E to handswitch at MCB 1PM06J	C
Valve 1SX001B		
1SX035	480-Vac MCC 132X1 (1AP23E) to valve	P
1SX036	1AP23E to valve limit switch	C
1SX037	1AP23E to handswitch at MCB 1PM06J	C
Valve 1SX016A		
1SX051	480-Vac MCC 131X5 (1AP30E) to valve	P
1SX052	1AP30E to valve limit switch	C
1SX053	1AP30E to handswitch at MCB 1PM06J	C
1SX473	Handswitch at MCB 1PM06J to Protection System Cabinet 1PA09J	C

TABLE Q10.65-1 (Cont'd)

CABLE NO.	DESCRIPTION	TYPE*
Valve 1SX016B		
1SX054	480-Vac MCC 132X4 (1AP28E) to valve	P
1SX055	1AP28E to valve limit switch	C
1SX056	1AP28E to handswitch at MCB 1PM06J	C
1SX475	Handswitch at MCB 1PM06J to Protection System Cabinet 1PA10J	C
Valve 1SX027A		
1SX057	480-Vac MCC 131X5 (1AP30E) to valve	P
1SX058	1AP30E to valve limit switch	C
1SX059	1AP30E to handswitch at MCB 1PM06J	C
1SX208	1AP30E to Remote Shutdown Panel 1PL04J	C
Valve 1SX027B		
1SX060	480-Vac MCC 132X4 (1AP28E) to valve	P
1SX061	1AP28E to valve limit switch	C
1SX062	1AP28E to handswitch at MCB 1PM06J	C
1SX209	1AP28E to Remote Shutdown Panel 1PL05J	C
Valve 1SX101A		
1SX471	4160-Vac ESF Switchgear Bus 141 1AP05EM to valve solenoid	P
Valve 1SX173		
1AF196	480-Vac ESF MCC 132X1 (1AP23E) to AFW pump 1B startup panel 1AF01J	P
1SX075	AFW pump 1B startup panel 1AF01J to valve solenoid	C
1VA584	480-Vac ESF Switchgear Bus 132X (1AP12E) to AFW pump 1B startup panel 1AF01J	C

TABLE Q10.65-1 (Cont'd)

CABLE NO.	DESCRIPTION	TYPE*
Valve 1SX178		
1AF196	480-Vac ESF MCC 132X1 (1AP23E) to AFW pump 1B startup panel 1AF01J	P
1SX076	AFW pump 1B startup panel 1AF01J to valve solenoid	C
1SX347	AFW pump 1B startup panel 1AF01J to valve limit switch	C
1VA584	480-Vac ESF Switchgear Bus 132X (1AP12E) to AFW pump 1B startup panel 1AF01J	C

*P = Power
C = Control

TABLE Q10.65-2

CABLE LISTING BY FIRE ZONE
FOR VALVES WHOSE SPURIOUS
ACTUATION COULD AFFECT SAFE SHUTDOWN

FIRE ZONE	CABLE NO.	VALVE NO.
Valves 1AF004A and 1AF004B		
3.2-0	1AF207	1AF004B
3.2A-1	1AF209	1AF004B
3.2B-1	1AF207	1AF004B
	1AF209	1AF004B
3.2C-1	1AF207	1AF004B
	1AF209	1AF004B
3.2D-1	1AF209	1AF004B
3.2E-1	1AF200	1AF004A
	1AF202	1AF004A
3.3B-1	1AF200	1AF004A
	1AF202	1AF004A
3.3C-1	1AF200	1AF004A
3.3D-1	1AF200	1AF004A
	1AF202	1AF004A
3.4A-1	1AF200	1AF004A
	1AF202	1AF004A
5.4-1	1AF200	1AF004A
	1AF202	1AF004A
5.5-1	1AF200	1AF004A
	1AF207	1AF004B
5.6-1	1AF202	1AF004A
11.4-0	1AF197	1AF004A
	1AF198	1AF004A
	1AF199	1AF004A
	1AF200	1AF004A
	1AF202	1AF004A
	1AF204	1AF004B
	1AF205	1AF004B
	1AF206	1AF004B

TABLE Q10.65-2 (Cont'd)

FIRE ZONE	CABLE NO.	VALVE NO.
Valves 1AF004A and 1AF004B (Cont'd)		
	1AF207	1AF004B
	1AF208	1AF004B
	1AF209	1AF004B
	1AF311	1AF004A
	1AF312	1AF004B
11.4-1	1AF201	1AF004A
Valves 1FP010 and 1FP011		
1.2-1	1FP031	1FP011
	1FP032	1FP011
	1FP033	1FP011
	1FP034	1FP011
	1FP458	1FP011
2.1-0	1FP030	1FP011
	1FP035	1FP010
	1FP059	1FP010
3.2-0	1FP035	1FP010
3.2B-1	1FP040	1FP010
	1FP059	1FP010
3.2C-1	1FP035	1FP010
	1FP059	1FP010
3.2E-1	1FP030	1FP011
3.3C-1	1FP030	1FP011
3.3D-1	1FP030	1FP011
3.4A-1	1FP030	1FP011
11.3-0	1FP035	1FP010
11.3-1	1FP035	1FP010
	1FP036	1FP010
	1FP037	1FP010
	1FP038	1FP010
11.4-0	1FP035	1FP010

TABLE Q10.65-2 (Cont'd)

FIRE ZONE	CABLE NO.	VALVE NO.
Valves 1FP010 and 1FP011 (Cont'd)		
11.5-0	1FP030	1FP011
	1FP035	1FP010
11.5A-1	1FP030	1FP011
11.6-0	1FP030	1FP011
	1FP035	1FP010
Valves 0SX162A and 0SX162B		
2.1-0	1SX157	0SX162A
	1SX158	0SX162A
	1SX169	0SX162B
	1SX170	0SX162B
	1SX345	0SX162A
	1SX346	0SX162B
3.2-0	1SX170	0SX162B
3.2A-1	1SX157	0SX162A
	1SX169	0SX162B
	1SX345	0SX162A
	1SX346	0SX162B
3.2B-1	1SX169	0SX162B
	1SX346	0SX162B
3.2C-1	1SX169	0SX162B
	1SX170	0SX162B
	1SX346	0SX162B
3.2E-1	1SX158	0SX162A
3.3A-1	1SX157	0SX162A
3.3B-1	1SX157	0SX162A
	1SX345	0SX162A
3.3C-1	1SX157	0SX162A
	1SX158	0SX162A
	1SX345	0SX162A
3.3D-1	1SX158	0SX162A

TABLE Q10.65-2 (Cont'd)

FIRE ZONE	CABLE NO.	VALVE NO.
Valves 0SX162A and 0SX162B (Cont'd)		
3.4A-1	1SX158	0SX162A
5.1-1	1SX169	0SX162B
	1SX346	0SX162B
5.2-1	1SX157	0SX162A
	1SX345	0SX162A
5.3-1	1SX157	0SX162A
5.4-1	1SX345	0SX162A
5.6-1	1SX157	0SX162A
	1SX345	0SX162A
11.1A-0	1SX158	0SX162A
11.1B-0	1SX170	0SX162B
11.2-0	1SX158	0SX162A
	1SX170	0SX162B
11.3-0	1SX158	0SX162A
	1SX170	0SX162B
11.4-0	1SX158	0SX162A
	1SX170	0SX162B
11.5-0	1SX158	0SX162A
	1SX170	0SX162B
11.6-0	1SX158	0SX162A
	1SX170	0SX162B
17.2-1	1SX167	0SX162B
	1SX168	0SX162B
17.2-2	1SX155	0SX162A
	1SX156	0SX162A
	1SX157	0SX162A
18.4-1	1SX157	0SX162A
	1SX345	0SX162A

TABLE Q10.65-2 (Cont'd)

FIRE ZONE	CABLE NO.	VALVE NO.
Valves 0SX162A and 0SX162B (Cont'd)		
18.14A-1	1SX167	0SX162B
	1SX168	0SX162B
	1SX169	0SX162B
Valves 1SX001A and 1SX001B		
2.1-0	1SX033	1SX001A
	1SX037	1SX001B
3.2-0	1SX037	1SX001B
3.2C-1	1SX037	1SX001B
3.2E-1	1SX033	1SX001A
3.3C-1	1SX033	1SX001A
3.3D-1	1SX033	1SX001A
3.4A-1	1SX033	1SX001A
11.1A-1	1SX031	1SX001A
	1SX032	1SX001A
11.1B-0	1SX035	0SX001B
	1SX036	0SX001B
11.2-0	1SX031	1SX001A
	1SX032	1SX001A
	1SX035	1SX001B
	1SX036	1SX001B
11.3-0	1SX031	1SX001A
	1SX032	1SX001A
	1SX035	1SX001B
	1SX036	1SX001B
	1SX037	1SX001B
11.4-0	1SX031	1SX001A
	1SX032	1SX001A
	1SX033	1SX001A
	1SX037	1SX001B

TABLE Q10.65-2 (Cont'd)

FIRE ZONE	CABLE NO.	VALVE NO.
Valves 1SX001A and 1SX001B (Cont'd)		
11.5-0	1SX033	1SX001A
	1SX037	1SX001B
11.6-0	1SX033	1SX001A
	1SX037	1SX001B
Valves 1SX016A and 1SX016B		
2.1-0	1SX053	1SX016A
	1SX056	1SX016B
	1SX473	1SX016A
	1SX475	1SX016B
3.1-1	1SX056	1SX016B
3.2A-1	1SX056	1SX016B
3.2B-1	1SX475	1SX016B
3.2C-1	1SX056	1SX016B
	1SX475	1SX016B
3.2D-1	1SX056	1SX016B
3.2E-1	1SX053	1SX016A
3.3B-1	1SX473	1SX016A
3.3C-1	1SX053	1SX016A
	1SX473	1SX016A
3.3D-1	1SX053	1SX016A
3.4A-1	1SX053	1SX016A
5.5-1	1SX473	1SX016A
	1SX475	1SX016B
11.3-1	1SX051	1SX016A
	1SX052	1SX016A
	1SX055	1SX016B
11.3E-1	1SX051	1SX016A

TABLE Q10.65-2 (Cont'd)

FIRE ZONE	CABLE NO.	VALVE NO.
Valves 1SX016A and 1SX016B (Cont'd)		
11.5-0	1SX051	1SX016A
	1SX052	1SX016A
	1SX054	1SX016B
	1SX055	1SX016B
	1SX056	1SX016B
11.5A-1	1SX051	1SX016A
	1SX052	1SX016A
11.5B-1	1SX054	1SX016B
	1SX055	1SX016B
11.6-0	1SX051	1SX016A
	1SX052	1SX016A
	1SX053	1SX016A
11.6-1	1SX054	1SX016B
	1SX055	1SX016B
	1SX056	1SX016B
Valves 1SX027A and 1SX027B		
2.1-0	2SX059	1SX027A
	1SX062	1SX027B
3.1-1	1SX062	1SX027B
	1SX209	1SX027B
3.2A-1	1SX062	1SX027B
	1SX209	1SX027B
3.2C-1	1SX062	1SX027B
3.2D-1	1SX062	1SX027B
3.2E-1	1SX059	1SX027A
3.3C-1	1SX059	1SX027A
3.3D-1	1SX059	1SX027A
3.4A-1	1SX059	1SX027A
11.3-0	1SX209	1SX027B

TABLE Q10.65-2 (Cont'd)

FIRE ZONE	CABLE NO.	VALVE NO.
Valves 1SX027A and 1SX027B (Cont'd)		
11.3-1	1SX057	1SX027A
	1SX058	1SX027A
	1SX061	1SX027B
11.3E-1	1SX057	1SX027A
11.4-0	1SX208	1SX027A
	1SX209	1SX027B
11.4C-0	1SX208	1SX027A
	1SX209	1SX027B
11.5-0	1SX057	1SX027A
	1SX058	1SX027A
	1SX060	1SX027B
	1SX208	1SX027A
	1SX209	1SX027B
11.5-1	1SX062	1SX027B
11.5A-1	1SX057	1SX027A
	1SX058	1SX027A
11.5B-1	1SX060	1SX027B
	1SX061	1SX027B
11.6-0	1SX057	1SX027A
	1SX058	1SX027A
	1SX059	1SX017A
	1SX062	1SX027B
	1SX208	1SX027A
	1SX209	1SX027B
11.6-1	1SX060	1SX027B
	1SX061	1SX027B
	1SX062	1SX027B
Valve 1SX101A		
5.2-1	1SX471	1SX101A
11.4-0	1SX471	1SX101A
11.5-0	1SX471	1SX101A
11.6-0	1SX471	1SX101A

TABLE Q10.65-2 (Cont'd)

FIRE ZONE	CABLE NO.	VALVE NO.
Valves 1SX173 and 1SX178		
3.1-1	1VA584	1SX173 and 1SX178
5.1-1	1VA584	1SX173 and 1SX178
11.3-0	1AF196	1SX173 and 1SX178
11.4-0	1AF196	1SX173 and 1SX178
	1VA584	1SX173 and 1SX178
11.4A-1	1AF196	1SX173 and 1SX178
	1SX075	1SX173
	1SX076	1SX178
	1SX347	1SX178
	1VA584	1SX173 and 1SX178
11.5-0	1VA584	1SX173 and 1SX178

TABLE Q10.65-3

SPURIOUSLY ACTUATED VALVES AND REDUNDANT EQUIPMENT WITH CABLING IN COMMON FIRE ZONES

VALVE	REDUNDANT EQUIPMENT	FIRE ZONES CONTAINING CABLING FOR VALVE AND REDUNDANT EQUIPMENT
1AF004A	Auxiliary feedwater pump 1B (1AF01PB)	5.4-1 11.4-0 11.5-0 11.6-0
1AF004B	Auxiliary feedwater pump 1A (1AF01PA)	3.2A-1 11.4-0 11.5-0 11.6-0
OSX162A	ESW pump 1B (1SX01PB)	11.2-0 11.3-0 11.4-0 11.5-0 11.6-0
OSX162B	ESW pump 1A (1SX01PA)	11.2-0 11.3-0 11.4-0 11.5-0 11.6-0
1SX001A	ESW pump 1B (1SX01PB)	11.2-0 11.3-0 11.4-0 11.5-0 11.6-0
1SX001A	Centrifugal charging pump 1B (1CV01PB)	3.2A-1 11.3-0 11.4-0 11.5-0 11.6-0
1SX001A	RCFC train B fan 1VP01CB	11.3-0 11.4-0 11.5-0 11.6-0
1SX001A	RCFC train B fan 1VP01CD	11.3-0 11.4-0 11.5-0 11.6-0

TABLE Q10.65-3 (Cont'd)

VALVE	REDUNDANT EQUIPMENT	FIRE ZONES CONTAINING CABLING FOR VALVE AND REDUNDANT EQUIPMENT
1SX001A	Auxiliary feedwater pump 1B (1AF01PB)	11.3-0 11.4-0 11.5-0 11.6-0
1SX001B	ESW pump 1A (1SX01PA)	11.2-0 11.3-0 11.4-0 11.5-0 11.6-0
1SX001B	Centrifugal charging pump 1A (1CV01PA)	11.3-0 11.4-0 11.5-0 11.6-0
1SX001B	RCFC train A fan 1VP01CA	11.4-0 11.5-0 11.6-0
1SX001B	RCFC train A fan 1VP01CC	11.4-0 11.5-0 11.6-0
1SX001B	Auxiliary feedwater pump 1A (1AF01PA)	11.4-0 11.5-0 11.6-0
1SX016A	ESW pump 1B (1SX01PB)	11.3-1 11.5-0 11.6-0
1SX016A	RCFC train B fan 1VP01CB	11.5-0 11.6-0
1SX016A	RCFC train B fan 1VP01CD	11.5-0 11.6-0
1SX016B	ESW pump 1A (1SX01PA)	3.2A-1 11.3-1 11.5-0
1SX016B	RCFC train A fan 1VP01CA	11.5-0
1SX016B	RCFC train A fan 1VP01CC	11.5-0

TABLE Q10.65-3 (Cont'd)

VALVE	REDUNDANT EQUIPMENT	FIRE ZONES CONTAINING CABLING FOR VALVE AND REDUNDANT EQUIPMENT
1SX027A	ESW pump 1B (1SX01PB)	11.3-1 11.4-0 11.4C-0 11.5-0 11.6-0
1SX027A	RCFC train B fan 1VP01CB	11.4-0 11.4C-0 11.5-0 11.6-0
1SX027A	RCFC train B fan 1VP01CD	11.4-0 11.4C-0 11.5-0 11.6-0
1SX027B	ESW pump 1A (1SX01PA)	3.2A-1 3.2C-1 11.3-0 11.3-1 11.4-0 11.5-0 11.6-0
1SX027B	RCFC train A fan 1VP01CA	11.4-0 11.5-0 11.6-0
1SX027B	RCFC train A fan 1VP01CC	11.4-0 11.5-0 11.6-0
1SX101A	Auxiliary feedwater pump 1B (1AF01PB)	11.4-0 11.5-0 11.6-0
1SX101A	ESW pump 1B (1SX01PB)	11.4-0 11.5-0 11.6-0
1SX173	Auxiliary feedwater pump 1A (1AF01PA)	11.4-0 11.5-0
1SX173	ESW pump 1A (1SX01PA)	11.3-0 11.4-0 11.5-0

TABLE Q10.65-3 (Cont'd)

VALVE	REDUNDANT EQUIPMENT	FIRE ZONES CONTAINING CABLING FOR VALVE AND REDUNDANT EQUIPMENT
1SX178	Auxiliary feedwater pump 1A (1AF01PA)	11.4-0 11.5-0
1SX178	ESW pump 1A (1SX01PA)	11.3-0 11.4-0 11.5-0

QUESTION 010.66

"The fire protection report, Section 2.4.1.6, indicates that the ability exists to achieve and maintain hot shutdown independent of each fire zone, without taking credit for repairs. However, the June 17, 1983 revision of the report indicates that repairs are necessary to overcome fire-induced spurious operation of the pressurizer PORV. SRP Section 9.5.1 requires that one train of systems necessary to achieve and maintain hot standby/ shutdown be free of fire damage. Provide a description of the design modifications necessary to prevent spurious operation of the PORV or describe the operator actions necessary to overcome spurious operation of the PORV without repairs. Additionally, verify that operator actions identified in Questions 10.64 and 10.65 do not require repairs to achieve and maintain hot shutdown conditions."

RESPONSE

Refer to revised Subsection 2.4.3.2.2.3 of the Fire Protection Report (Amendment 3) for a discussion of design modifications and operator actions necessary to overcome spurious operation of the pressurizer PORV's.

No repairs are required to achieve and maintain hot shutdown conditions.