



CHARLES CENTER • P. O. BOX 1475 • BALTIMORE, MARYLAND 21203

ARTHUR E. LUNDVALL, JR.
VICE PRESIDENT
SUPPLY

May 14, 1982

Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. Robert A. Clark, Chief
Operating Reactors Branch #3
Division of Licensing

Subject: Calvert Cliffs Nuclear Power Plant
Unit 1, Docket No. 50-317
Fire Protection

References: (a) Letter from R. A. Clark to A. E. Lundvall, Jr.
dated April 19, 1982.
(b) Letter from A. E. Lundvall, Jr. to R. A. Clark
dated April 6, 1982.

Gentlemen:

Reference (a) requested certain additional information on the subject of fire protection modifications at Calvert Cliffs Nuclear Power Plant Unit 1. The requested information is provided as an enclosure to this letter.

Also please note that reference (b) is applicable to docket number 50-317 as well as docket number 50-318.

If you have any further questions on this topic, please do not hesitate to ask.

Very truly yours,

John G. ...
for AEL.

cc: J. A. Biddison, Esquire
G. F. Trowbridge, Esquire

Messrs: D. H. Jaffe - NRC
R. E. Architzel - NRC

A006
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REQUEST FOR ADDITIONAL INFORMATION.- FIRE PROTECTION MODIFICATIONS

1. The NRC staff, in a letter dated May 19, 1980, requested that the licensee install alternative shutdown capability independent of the cabling and equipment in the control room, both cable spreading rooms (and adjoining cable chases), six cable chases, and other rooms containing unprotected redundant cables/equipment required for safe shutdown. The licensee has not committed or concisely stated that they comply with the above requirement. Therefore, state what areas of the Unit 1 require alternative safe shutdown system(s) and which areas meet the provisions of Section III.G.2 of Appendix R.

Response

The "Interactive Cable Analysis for Calvert Cliffs Nuclear Power Plant - Unit No. 1" (ICA) submitted on September 30, 1981 discussed existing equipment locations, cable routes, and any modifications required to assure the capability of reaching hot standby and cold shutdown after any single postulated fire. Detailed information was presented on a device-by-device basis within each fire area along with any applicable modifications. Within each area, any of four conditions may be found:

- (1) No safe shutdown equipment or cables are contained in the area.
- (2) Safe shutdown equipment or cables are contained in the area but redundant devices exist independent of the area under study.
- (3) Safe shutdown equipment or cables are contained in the area and modifications to cable routes will be made to provide separation in accordance with Section III.G.2 of Appendix R.
- (4) Safe shutdown equipment or cables are contained in the area and modifications will be made to provide alternate safe shutdown in accordance with Section III.L.

These conditions were clearly indicated for each device, however, the following list concisely states the compliance with Section III.G.2 or III.L for each area. For each listing, the most restrictive condition encountered is listed (i.e., if any single device requires alternate shutdown, the entire area is listed as III.L). N/A will be shown for areas containing no safe shutdown equipment or cables.

<u>Fire Area</u>		<u>Fire Area</u>	
100/103/104/110/116	III.L	405	III.L
111	N/A	408/410/413/419/424/425/426/428	III.L
112	N/A	412	N/A
113	N/A	420	III.G.2
114	III.G.2	421	III.G.2
115	III.L	422	III.G.2
117	N/A	423	III.L
118	III.G.2	427	N/A
119	III.L	429	III.L
122	N/A	430	III.L
123	N/A	431	III.G.2
AB-1	N/A	432	N/A
AB-2	III.G.2	434	N/A
		435	N/A
217	III.G.2	436	N/A
218	III.G.2	437	N/A
220	N/A	438	N/A
221/326	III.G.2		
222	III.G.2	501/502/503/504/505/506/507/508/	
223	III.G.2	509/510/511/513/514/515/516/517/	
224	III.G.2	518/519/521/522/523/534/535	N/A
225	III.L	512	N/A
226	III.G.2	524	N/A
227/316	III.L	525	N/A
228	III.L	526	N/A
		527	N/A
301	III.G.2	528	N/A
303	N/A	529	III.G.2
304	III.G.2	530	III.G.2
305	III.G.2	531	N/A
307	III.G.2	533	N/A
308	III.G.2	536	N/A
315	III.L	537	N/A
317	III.L	538	N/A
318	III.G.2	CCU1	III.G.2
319/323/325	III.L		
320	N/A	603	III.L
324	III.G.2		
327	N/A	TB	III.L
328	III.G.2		
CC1A	III.L	IS	III.G.2
CC1B	III.L		
CC1C/306	III.L		
AB-5	N/A		

2. The BG&E submittal dated September 30, 1981 states that HPSI will be used as a backup in case the letdown system will not be available. However, during a conference telephone call dated December 19, 1981, among BNL, NRC, and BG&E, you stated that HPSI would not be used or required. BG&E should clarify their position regarding the role of HPSI in their alternative safe shutdown system.

Response

HPSI pumps and associated equipment were included in Attachment 1 to the September 30, 1981 submittal (ICA) as redundant to letdown on the logic chart entitled "Pressurizer Heaters - Alternate (PH-ALT)". It should be noted that equipment on this chart was not required unless all pressurizer heater banks were inoperable. Attachment 1, the "Report on Alternate Safe Shutdown at Calvert Cliffs Nuclear Power Plant" was written and submitted prior to the September, 1981 submittal and was utilized as a framework for the entire ICA. As shown in the ICA and confirmed in the December 19, 1981 telephone conversation, no postulated fire simultaneously affected all pressurizer heater banks and equipment required for RCS letdown. Therefore, as indicated, HPSI is not required to provide sufficient redundancy to assure the capability of reaching hot or cold shutdown after a postulated fire.

3. BG&E has not yet committed to providing the capability for achieving cold shutdown within 72 hours as required by Appendix R to 10 CFR Part 50. Our position is that the licensee should meet this Appendix R requirement. Therefore, we require that BG&E clearly state that they will comply with this requirement.

Response

As required by Appendix R to 10 CFR Part 50 after modifications as indicated in the ICA, capability will exist to achieve cold shutdown within 72 hours after any postulated fire.

4. BG&E has not stated in writing that they will provide capability for monitoring source range flux or level indication for any storage tanks used for alternative post fire shutdown, e.g., boric acid tank and the refueling storage water tank as part of the alternative shutdown capability. It is our position that BG&E provide this commitment. (Note: The tank level indication(s) can be indicated at the tank location).

Response

BG&E will provide local tank level indication for all storage tanks used for alternative post fire shutdown including the boric acid tanks and the refueling water storage tank. We do not intend to provide additional capability for monitoring source range flux. Source range flux monitoring is not necessary to provide direct readings of the process variables necessary to perform and control reactivity control functions. Reactivity is controlled initially by rod insertion from the control room, the cable spreading room, or the switchgear room by removing power to the Control Element Drive Mechanisms. The fact that power has been removed can be observed directly at the breakers or switches. Decreasing reactor hot and cold leg temperatures (in addition to hot leg temperature approaching cold leg temperature), decreasing pressurizer pressure and level, and decreasing steam generator pressure all provide direct readings that the reactor is shutdown. Reactor shutdown is maintained by any one of three charging pumps taking suction from the concentrated boric acid tanks or the refueling water storage tank. These processes will be observed directly by decreasing tank level indication, increasing pressurizer level indication, and by reactor coolant samples analyzed for boron concentration. For cold shutdown, reactivity control can also be provided by boric acid from the concentrated boric acid tanks by one of two boric acid pumps through a charging line isolation valve or a safety injection header valve. Again, these processes will be directly observed

by decreasing tank level indication, increasing pressurizer level indication, and reactor coolant samples analyzed for boron concentration. Based on the above considerations, the performance goals for the shutdown functions listed in 10CFR50 Appendix R Section L are adequately achieved. Additional source range flux monitoring capability is not necessary to meet these requirements or to protect the public health and safety in the unlikely event of a fire at Calvert Cliffs. The Technical Specifications also acknowledge this line of reasoning as demonstrated by the fact that should source range indication be lost while shutdown, Table 3.3-1.11.b requires "verification of compliance with the Shutdown Margins requirements of Specification 3.1.1.1 or 3.1.1.2 (as applicable) within 1 hour and at least once per 12 hours thereafter." Plant operation following a fire entails no special or additional need for source range flux indication beyond requirements for normal shutdown operation. We intend to meet the requirements of this Technical Specification following a fire as well as during normal shutdown operations. Additional source range instrumentation is not necessary to insure that the proper Shutdown Margin is maintained.

5. The licensee has not yet committed to develop and implement written procedures pertaining to alternative shutdown. It is our position that BG&E should provide this information.

Response

BG&E will develop and implement detailed written procedures to deal with fire related shutdowns. These procedures will be approved and operational prior to the required in service dates for alternate shutdown modifications.

The September 30, 1981 submittal (ICA) contained both a geographical analysis (room by room) of fire related shutdowns and a "Report on Alternate Safe Shutdown at Calvert Cliffs Nuclear Power Plant" (Attachment 1 to the ICA). The attachment rendered a system operations overview complete with equipment numbers and related logic charts. The geographical analysis indicated the equipment available to deal with a specific fire as well as the anticipated method of operation.

To help clarify the information previously submitted, a manpower utilization summary for shutdown as a result of a postulated Control Room fire follows. This shutdown places the greatest demands on plant staff since it involves both units, requiring the timely start of auxiliary feedwater supply as well as continuous manning of the auxiliary shutdown panel for each unit. As required by Appendix R to 10 CFR 50, a concurrent loss of offsite power is assumed, necessitating manual alignment of diesel generator cooling equipment and local generator start-up and control to override possible damage to related cables in the Control Room.

To trip the reactors and transfer control to the auxiliary shutdown panels (ASP) following the postulated Control Room fire:

- (1) For each unit, one qualified operator will:
 - (a) Ensure control rod insertion by removing C.E.D.M. motor-generator power in the Switchgear Rooms.
 - (b) Transfer control of the atmospheric dump valves to the ASP.
This is accomplished through operation of manual air transfer valves in the 45' Switchgear Room.
 - (c) Man the ASP during the remainder of the shutdown. See the ICA for a description of the ASP.

(2) For each unit, one qualified operator will:

- (a) Transfer AFW pump discharge flow control to the ASP and manually align valves for diesel generator cooling. This is accomplished through operation of manual air transfer valves all centrally located on the Service Water Pump Room wall at 10' elevation.
- (b) Transfer steam driven AFW pump turbine control to the ASP through operation of manual air transfer valves in the existing AFW Pump Room on the same elevation.

Completion of actions listed in (1) and (2) above assure AFW supply within the time constraints indicated in the Calvert Cliffs FSAR.

Completion of action (2) above also accomplishes the necessary valve alignment for D.G. cooling.

To complete 4 kV diesel generator supply:

- (3) One qualified operator will, from the start of this event, manually clear both diesel supplied 4 kV busses (one per unit). This operator will then be responsible for placing each D.G. in local control and D.G. start-up.
- (4) Three qualified operators will align the D.G.'s as required and manually sequence on loads in the 4 kV Switchgear Rooms. These operators will be available after completion of tasks in (2) and (3).

After return of 4 kV power:

- (5) One qualified operator per unit will remove power from ERV-402, ERV-404, and MOV-651 to ensure reactor coolant inventory maintenance.
- (6) Three qualified operators are now available for local pump and valve operation necessary to maintain hot standby conditions.

The above operations assure safe shutdown of both units at Calvert Cliffs following a postulated fire requiring Control Room evacuation. Manpower is provided by two S.R.O.'s and three R.O.'s. These personnel are available at all times. One S.R.O. and four plant watch personnel are dedicated to the fire brigade in accordance with Appendix R to 10 CFR 50 and are not included in the above requirements.