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SUBJECT: Responds to NRC 910730 request for addl info re Rev 4 to fire protection review rept.Rev 4 to "App R Multiple High Impedance Fault Analysis" encl.

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AUG 29 1991

Director of Nuclear Reactor Regulation
Attention: Dr. W. R. Butler, Project Director
Project Directorate I-2
Division of Reactor Projects
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
NRC REQUEST FOR ADDITIONAL INFORMATION
REGARDING REVISION 4 TO THE FPRR
(TAC NOS. 75910 AND 75911) **Docket Nos. 50-387**
PLA-3640 FILES A17-4, A20-1 **and 50-388**

Dear Dr. Butler:

As a result of your staff's review of our December 29, 1989 submittal of proposed Revision 4 of the Fire Protection Review Report for Susquehanna SES, a request for additional information was developed and forwarded to us on July 30, 1991. The response to this request is provided below:

NRC Question:

1. *"Insert" Page 3.3-3*

   The meaning of this paragraph is not clear. It could be interpreted to read that fire induced damage can be anticipated and that operator actions can be taken prior to fire damage affecting safe shutdown. This concept is contrary to Appendix R for which fire damage must be assumed to occur to unprotected circuits within a fire area. Please clarify this statement.

A006
1/1

PP&L Response:

Delete the paragraph and replace it with the following:

> *"The effects of fire induced spurious signals which result in a transient were examined. This examination encompassed the occurrence both before and after the initiation of a SCRAM. It was determined that there were no adverse effects introduced by this scenario and that safe shutdown can be achieved automatically or manually using protected safe shutdown components."*

NRC Question:

2. *"Insert A" on page 3.3-9*

Please provide the multiple high impedance fault analysis for review.

PP&L Response:

SEA-EE-194 "Appendix R Multiple High Impedance Fault Analysis" is attached for your review.

NRC Question:

3. *Inserts pertaining to combustible loading calculations*

A review of modifications which only assures that the total combustible fire load within a fire area is less than the fire resistance of the fire area boundary is not acceptable. This method does not take into consideration localized combustibles nor does it consider that deviations may have been granted for a given fire area based on the loadings provided in the deviation request and/or the fire hazards analysis. Once these loadings are modified, the approved deviation may no longer be valid. Please provide justification for not updating combustible loading information.

PP&L Response:

We recognize the importance of considering the arrangement and type of combustibles when evaluating fire hazards. Our Deviation Requests provide specific details on location, arrangement and types of combustibles. The Fire Protection Program requires these factors to be considered in the design process and require that new designs must not invalidate the bases, and assumptions used in Deviation Requests.

We intend for future modifications to evaluate and revise the Deviation Requests as necessary for all information which describes the arrangement, location and type of combustibles. We do not intend to revise the Deviation Requests for minor changes in the quantity of combustibles.

NRC Question:

4. *Deviation Request No. 16 page DR16-2*

Why are these transfer valves now required? Provide justification why the minimal separation between these motor operated transfer valves is acceptable.

PP&L Response:

The change to Deviation Request No. 16 is based on the location and arrangement of these valves and adjacent equipment. The equipment makes it almost impossible to locate transient combustibles near the valves. This same arrangement also made it almost impossible to install the required one hour fire barrier originally planned for this equipment. In addition to the physical layout, a review indicated that adequate protection is also provided to the valves by automatic sprinklers and detection.

NRC Question:

5. *Deviation Request No. 24 page DR24-2*

Provide an explanation why the cables being addressed have changed since the original submittal, including why cable for HV-G33-2F004 is no longer being wrapped.

PP&L Response:

The original deviation identified the component HV-633-2F004 (Div. II) and the opposite division's cable trays (Div. I). The Rev. 4 addition to the Deviation Request was to clarify that the Div. I cable tray only included the cables associated with Div. I Safe Shutdown component HV-E21-2F005. The Deviation Request never intended to wrap the cable associated with HV-G33-2F004 in the 2-5D Fire Zone. The deviation was requested so that we did not have to install a Fire Suppression System in the 2-5D Fire Zone.

In addition, on page DR24-4 the clarification was made to explain how PP&L plans to handle the situation when new Appendix R safe shutdown cables are installed in Fire Zone 2-5D.

NRC Question:

6. *Deviation Request No. 26 page DR26-1*

Why were the RHR valve controls and control circuits not addressed in the original request?

Please provide Inserts A1, B and C.

PP&L Response:

At the time of the Revision 3 submittal, the RHR valve controls and control circuits were identified as requiring protection. As Appendix R Closeout Modifications were developed, it was discovered that the existing Deviation Request No. 26 for Fire Zone 2-3B-N should be expanded to include the RHR Valve controls and control circuits.

Inserts A1, B and C provided below:

INSERT A1

Actual in-situ combustible loading durations are provided to document existing arrangement and justify the deviation request. These values are based on the initial combustible loading analysis. Modifications subsequent to this analysis have revised these values with the possibility of future modifications revising them again. The governing criteria for the combustible loading analysis is that the fire area fire resistance rating exceed the combustible loading duration. The combustible loading durations specified in the deviation request will not be updated in the future since program commitments require that all modifications be evaluated to assure that additional combustibles are controlled to remain below the fire area fire resistance rating.

INSERT B

RHR:

As stated above, in Fire zone 2-3B-N, Division I of safe shutdown equipment is assured available for plant shutdown. Redundant RHR valves, HV-E11-2F008 (2F008) and HV-E11-2F009 (2F009), have control circuit cables and control devices located in Fire Zone 2-3B-N.

2F009 control circuit location is limited to the south end of 2-3B-N, south of Instrument Rack TB2C006. Pressure Instrument B31-N018A and Control Relay K33 are located on Instrument Rack TB2C006 and provide an open permissive to Valve 2F009. K33 is mounted in Terminal Box TB2C006-B3 located on south end of Instrument Rack TB2C006. Pressure Instrument B31-N018A is located about 1 foot above TB2C006-B3 and 2 feet below TB2006-B2. These are the only Valve 2F009 components outside of scheduled cable located in Fire Zone 2-3B-N. Flex conduit is used to connect wiring to these components at Instrument Rack TB2C006. Rigid steel Conduits E2K454 and E2K1Z1 route control circuit cables from TB2C006-B2 to Tray Section E2KH62. Tray Section E2KH62 is located directly above TB2C006-B2 at Elevation 708'-6". Valve 2F009 control circuit cables immediately leave Fire Zone 2-3B-N in Tray Section E2KH62 through the south wall of Fire Zone 2-3B-N. (Refer to C-1835, Sh. 1 and Sh. 2).

RHR Valve 2F008 Division II control circuits enter Fire Zone 2-3B-N at Tray F2KF61 through a sealed floor penetration approximately 36 feet north of Terminal Box TB2C006-B3, and 7' north of Column Line 33. Division II control circuits are routed vertically to Elevation 711'-9" and then north towards MCC2D274. Division II, 2F008, redundant components are all located in the northern section of Fire zone 2-3B-N at MCC2D274 and Instrument Rack TB2C022. MCC2D274 is approximately 105 feet north of Division I components at TB2C006 and Division II Instrument Rack, TB2C022, is approximately 81 feet north and 60 feet east of Division I Instrument Rack TB2C006. (Refer to C-1730, Sh. 1).

The closest spatial distance between redundant RHR Valve 2F008 and 2F009 control circuits or components is between TB2C006-B3 and Division II Tray F2KF61, about 36 feet and has been evaluated for intervening combustibles.

Automatic fire suppression exists in Fire Zone 2-3B-N up to Column Line Q. The 36 feet separating the redundant RHR valve control circuits or components is fully covered by automatic fire suppression and detection (refer to C-1815, Sheet 1). No safe shutdown cable trays exist south of column Line 33. All cable trays in this area have covers on the top and bottom. The same cable trays mentioned in CS flow instruments evaluation exist between RHR valve redundant control circuits and the elevation for core spray 41 foot spatial distance envelopes the RHR valve 36 foot spatial distance.

INSERT C

The minimum separation between RHR redundant isolation valve control circuits and components in Fire Zone 2-3B-N is sixteen feet greater than that required by Section III.G.2.b. The 36 feet separating the redundant circuits provides a high degree of margin for safety, in the event of a fire, to insure both divisions of RHR valve controls and control circuits will not be disabled.

Should you have further questions, please contact Mr. W.W. Williams at 215-774-7910.

Very truly yours,

H. W. Keiser

cc: NRC Document Control Desk (original)
NRC Region I
Mr. G. S. Barber, NRC Sr. Resident Inspector
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