Commonwealth Edison
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May 22, 1990

Dr. Thomas E. Murley, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Quad Cities Nuclear Power Station Units 1 and 2
Hot Shutdown Repairs in the Event of a Fire
NRC Docket No. 50-254/265

Reference: (a) T.M. Ross to L.D. Butterfield letter dated December 1, 1987.

(b) I.M. Johnson to T.E. Murley letter dated February 19, 1988.

(c) T.M. Ross to H.E. Bliss letter dated April 20, 1988.

Dr. Murley:

Reference (a) transmitted the Safety Evaluation Report (SER) for Interim Compensatory Measures and Request for Exemption from 10 CFR 50, Appendix R, Section III.G requirement regarding hot shutdown repairs for a fire. Commonwealth Edison conducted a review of the SER and transmitted comments via reference (b). The NRC Staff incorporated the comments and issued a revised SER.

Commonwealth Edison has reviewed the SER transmitted under reference (c). The attached provides the results of the review. Commonwealth Edison requests that the changes be reviewed by the staff and the SER be revised, as appropriate. Commonwealth Edison regrets the delay in providing this information.

Attachment A provides the proposed changes and Attachment B provides the basis for the changes.

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If there are any questions or comments, please direct them to this office.

Very truly yours,

R. Stols
Nuclear Licensing Administrator

Attachment A: Proposed changes to SER
B: Basis for the proposed changes

cc: A. Bert Davis, Regional Administrator, RIII
L.N. Olshan, Project Manager, NRR
D.P. Notley, Technical Staff, NRR
Senior Resident Inspector, Quad Cities

/lmw:RS:0989T

ATTACHMENT A

PROPOSED CHANGES TO

SAFETY EVALUATION REPORT

fire-induced electrical isolation deficiencies, spurious operations and high impedance faults. Also, the licensee requested exemptions from the Appendix R, Section III.G.1 requirement for performing repairs for achieving and maintaining hot shutdown, insofar as it is interpreted as disallowing such repairs. In the March 13, 1987 submittal, the licensee further stated that since all the needed safe shutdown hardware modifications had been completed, their corresponding ICMs would not be needed. Also, by the July 17, 1987 submittal, the licensee identified a few differences relating to the plant safe shutdown configuration as it exists now from what has been described in the earlier SER (December 30, 1982). For the reasons stated above, this SER addresses only differences from the earlier SER and the licensee's reevaluation relating to fire-induced electrical deficiency concerns, spurious operations concerns and high impedance faults concerns. Another SER, to be provided at a later date, will address technical exemptions requested in the reevaluation report related to fire protection features for specific plant areas.

2.0 EVALUATION

2.1 Spurious Operations and High Impedance Faults

In their submittals, the licensee stated that a fire in any one of certain plant areas could damage RHR system logic cables associated with safe shutdown equipment which, in turn, could result in spurious operations of RHR pumps and valves, diesel generators auxiliary equipment, four relief valves and one safety relief valve (SRV) and 4 KV breakers. Additionally, a fire event in any one of certain plant areas could also damage relief valve associated circuits resulting in their spurious operations. To eliminate these spurious operations, the licensee has proposed to deenergize applicable circuits by opening respective breakers at dc distribution panels located in Fire Areas (FA) TB-I and TB-III (Turbine Building Northern and Southern Zone Groups). For a fire, in either FA TB-1 or TB-III, the licensee has proposed to deenergize the applicable circuits by pulling out control power fuses located in the applicable two of four panels in a timely manner (8 fuses within 30 minutes after scram for handling the RHR logic circuit concern and 10 fuses within 10 minutes after scram for handling the Relief Valves concern). All four panels, of which two of the panels (one for each unit) contain 8 fuses each and the other two panels (one for each unit) contain 10 fuses each, are located outside FAs TB-I and TB-III and are easily accessible following a fire event in either FA TB-I or TB-III.

Regarding fire-induced high impedance faults (faults in circuits supplying power to non-safe shutdown loads from a common power source that supplies power also to safe shutdown loads) which can affect power supply to safe shutdown loads, the licensee stated that plant safe shutdown procedures require the operator to shed all non-safe shutdown loads from common power buses ~~by tripping manually the associated breakers~~ in a timely manner. ~~Additionally,~~ These procedures require pulling out the 125 V dc control power fuses for electrically operated breakers associated with non-safe shutdown loads that are supplied power by 480 V or 4 kv switchgear common buses. This task will be performed prior to tripping applicable breakers as a precaution against their possible

spurious closures. The licensee pointed out that such fuse pulling would be performed either within 30 minutes or 3 hours after scram depending upon whether such actions are required before initiating reactor water makeup (30 minutes) or suppression pool cooling (3 hours).

With regard to the fuse pulling operations mentioned above, the licensee stated that applicable control power fuses are easily identifiable, readily accessible, easy to remove, under periodic surveillance, and that their removal would not involve any significant operator hazard. The licensee further stated that the plant shutdown procedures include operator instructions to perform the above tasks in a timely manner.

Based on the above, the staff finds the licensee's proposed ~~manual~~ hot shutdown repairs ~~actions~~, i.e., ~~tripping the applicable breakers and~~ pulling out the applicable fuses in a timely manner, for handling spurious operation and high impedance fault concerns, to be acceptable. The staff further recommends that the licensee's request for exemptions from the Appendix R, Section III.G.1 requirement for performing the above mentioned hot shutdown repair, i.e., fuse pulling for achieving and maintaining hot shutdown, be granted.

2.2 Electrical Isolation Deficiency

The licensee has identified three control circuits vulnerable to a fire-induced electrical isolation design deficiency (i.e., a fault on a remote circuit blowing a fuse common to both local and remote control circuits, prior to isolation of the needed hot shutdown circuit), which could compromise the ability to transfer the needed hot shutdown circuit to local control. These three control circuits are associated with engine starting controls for the Unit 1, Unit 2 and swing diesel generators. The licensee stated that, for these circuits, all applicable blown fuses would be replaced in a timely manner (within 30 minutes) and no more than four blown fuses, at any one time, would require such replacement. The licensee has committed to: 1) maintain replacement fuses and fuse pullers under surveillance in proximity of the engine starting controls for the diesel generators, 2) provide emergency lighting in these areas, and 3) provide manpower (as needed) to facilitate fuse replacements in a timely manner. The licensee further claimed that the circuits involved are low voltage control circuits and the fuses, though rated at 15 amperes, will actually carry much less current. Therefore, fuse replacement will not pose any undue operator hazard.

~~Besides the aforementioned circuits, the licensee has also identified a few 125 VDC control power circuits, associated with four specific 480V breakers, which are only singly fused. If the common control power fuses of these breakers are damaged by fire, plant shutdown procedures will require any of these breakers that are open to be manually closed within 30 minutes using a jacking handle stored in the vicinity of applicable 480V switchgear.~~

Based on all of the above, the staff has determined the licensee's proposed ~~manual closing of applicable breakers and~~ hot shutdown repairs, (i.e.,

ATTACHMENT B

SUMMARY OF CHANGES

1) Page 2, paragraph 2.1

   (a) Remove "by tripping manually the associated breakers".

   Manual tripping of associated breakers is allowed per Appendix R; therefore, an exemption is not required. Commonwealth Edison requests that this information be removed.

   (b) Remove "Additionally".

   This is a clarification provided that comment 1 (a) is accepted.

2) Page 3, paragraph 2.1

   (a) Remove "manual actions and tripping the applicable breakers"; add "hot shutdown repairs".

   The basis for this comment is the same as 1(a).

3) Page 3 paragraph 2.2

   (a) Delete the entire second paragraph.

   The information contained in the SER was extracted from a letter (I.M. Johnson to H.R. Denton letter dated December 30, 1986) which discusses Commonwealth Edison's response to IE Information Notice 85-09. In this response, Commonwealth Edison indicated that the concerns identified in the Information Notice are being resolved by Manual actions and an exemption request for the concern is deemed unnecessary. Commonwealth Edison, therefore requests this paragraph be removed, since no exemption was required.

   (b) Remove "manual closing of applicable breakers".

   The basis for the comment is the same as 1(a).