From: Russ Bywater, RJB
To: Linda Smith
Date: 8/11/01 11:06AM
Subject: ANO Appendix R Issues

Linda,

Please see the attached writeup summarizing my research on the ANO Appendix R licensing basis and recent fire protection issues.

The licensee continues to want to use their 7/1/82 Appendix R compliance approach regarding manual actions for components not in the same fire zone as the fire. That submittal was superceded by their 8/15/84 submittal after they learned through GL 83-33/IN 89-04, etc., that their fire zone approach was unacceptable.

It's also not clear to me that their 8/15/84 submittal is any better. It too credits manual actions for components "not physically located in the vicinity of the postulated fire." This methodology was not explicitly approved in the 8/26/88 NRR SER.

I recommend that we have a conference call with DRS and NRR on what we have on the plate and propose some plan of action.

Some items to consider:

5 [redacted]

thanks,

Russ

CC: Kathy Weaver; Mark Salley; Phil Qualls; Rebecca Nease; Thomas Alexion; William Reckley

Information in this record was deleted in accordance with the Freedom of Information Act, exemptions 5
FOIA- 2003-358

E/H

ANO APPENDIX R LICENSING BASIS HISTORY AND

RECENT INSPECTION ISSUES

HISTORY

7/1/82 ANO submits its Appendix R Compliance Review. It used the "fire zone approach" instead of a "system" or "fire area" approach. It included the statement that:

"In certain cases, credit for manual operation of equipment was taken if controls (and power for valves) could possibly be damaged by a fire. Such credit was only taken if:

A. The component to be operated is not located in the affected fire zone, although the cable may be damaged by the fire;
B. Sufficient time is available to perform the required manual actions; and
C. Personnel are available, beyond the fire brigade and minimum operations shift crew limitations, to perform the manual actions.

8/31/82 Meeting conducted at NRC HQ to discuss the licensee's submittal. Questions were provided by BNL. Included was discussion that, "For the 14 fire zones that the licensee indicates are in full compliance with Appendix R, but require some sort of manual or non-routine operation, the licensee should describe the safe shutdown equipment and cables that would be affected by a fire and the specific operator actions that would be required to obviate these effects."

9/3/82 Meeting summary issued for the 8/31/82 meeting. An RAI was forthcoming.

10/5/82 ANO responded to the RAI and repeated the operator actions discussion of the 7/1/82 submittal.

12/8/82 NRC issues draft SER of exemptions requested in the 7/1/82 submittal.

3/22/83 NRC grants exemptions requested in the 7/1/82 submittal.

3/24/83 ANO submits letter to NRC following the 3/1/83 Nuclear Utilities Fire Protection Group (NUFPG)/NRC meeting at HQ. ANO said that NRC had changed its interpretation of III.G.2.

ANO stated, in support of their 7/1/82 submittal, they:

> "ensured (where necessary) that at least one fire wall separated redundant trains. Complete enclosure was not considered a requirement. We believe this to be consistent with the requirement and intent of Appendix R. However, the interpretation stated by the NRC staff on March 1 goes further and requires at least one redundant train be fully enclosed by fire walls."

ANO said a reanalysis would be performed. Also, ANO said that NRC interpretations of fire suppression requirements had changed.

5/13/83 NRC issues SER on Alternative Shutdown Capability (III.G.3 and III.L)

7/12/83 ANO letter to NRC. ANO stated that they believe that their interpretations and assumptions were correct in the 7/1/82 submittal. ANO said that re-evaluation would cease pending formal NRC guidance.

9/14/83 NRC provides ANO with GL 83-33, "NRC Positions on Certain Requirements of Appendix R to 10CFR50"

2/13/84 & 3/7/84 NRC Issued IN 84-09 & Rev. 1, "Lessons Learned from NRC Inspection of Fire Protection Safe Shutdown Systems"

4/26/84 NRC hosts workshop on Appendix R issues for RIV plants in Arlington, TX.

8/15/84 ANO submits Appendix R Reanalysis and exemption requests.

> "This document updates and supercedes (the analysis portion) of our July 1982 Appendix R submittal by incorporation of NRC guidance (provided in GL 83-33, IN 84-09, and the management positions from the 4/26/84 Region IV workshop) into our methodology."
>
> "We request you review and approve our methodology and the included exemption requests."

The submittal stated:

> "Fire damaged cables are assumed to fail in the worst mode for the conditions under evaluation." And, "Where adequate time is available, and the valve is not physically located in the vicinity of the postulated fire, credit is taken for manual operation of manually operable valves."
>
> "All systems necessary for achieving hot and/or cold shutdown must be operable given a fire in any single fire area of the plant. The method of assuring operability of any component in a given system is to determine whether it is sufficiently protected or separated from the postulated fire. The separation criteria to be used are specified in Appendix R to 10CFR50, Section III.G and in clarification of that requirement presented in GL 83-33 and IN 84-09."

8/30/85 ANO provided revisions/updates to the 8/15/84 submittal.

9/30/87 NRC issued Appendix R audit inspection Report (IR 87-14). Questions were identified about manual actions required for a fire in Area B. "Licensee representatives had stated that redundant cables for manually-operated components in Fire Area B were not completely walked down to verify separation in accordance with Section III.G.2 separation requirements. The licensee's basis for not fully walking down Fire Area B cable routings was that credit was being taken for manual operation so that the cables were not required." Resolution of the issue was not clearly documented in the report.

URI was issued on high/low pressure interfaces (see also Bywater's IR 98-21).

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8/26/88 NRC grants exemptions requested in the 8/15/84 and 8/30/85 submittals and states that, "AP&L's proposed fire protection configuration provides an equivalent level of safety to that achieved by compliance with Appendix R. Therefore, the exemption requests as described in the enclosed Exemption are granted."

The SER does not appear to evaluate the licensee's methodology as requested in the 8/15/84 submittal; only the exemption requests.

RECENT ISSUES

With regard to issues identified by the inspectors recently, the licensee continues to refer to the material in the original 7/1/82 submittal regarding credit for manual actions, including credit for actions taken at components not located in the same fire zone. This position is included in their Fire Hazards Analysis. The licensee believes that this position is compliant with III.G.1.

For example, the resident staff identified that cables for the redundant Unit 1 BWST outlet valves located in Fire Zone 53-Y (Fire Area C) have less than 3 feet of separation and neither has a 1-hour fire barrier. There is detection but no suppression located in Zone 53-Y. The BWST valves are located in Zone 20-Y (also in Fire Area C). The valves and cables have only about 4 feet separation but one train of cables is protected with 1-hour fire wrap and there is detection and partial suppression in the zone.

Zone 53-Y also contains redundant trains of cables for the EDG fuel oil transfer pumps. The licensee uses fuel oil cross connect capability from Unit 2 as an alternate shutdown method. The NRC granted an exemption on 3/22/83 from having suppression and detection in Zone 53-Y, as required by III.G.3. (A detection system was installed later).

The licensee's cable routing database was in error and they had previously assumed that cables for only one of the BWST valves were located in Zone 53-Y. The licensee's position is that they need to revise their Zone 53-Y pre-fire plan to identify that manual operation of a BWST valve in Zone 20-Y may be required due to possible cable damage due to fire. They conclude that with this instruction in the pre-fire plan, (and having evaluated accessability, time requirements, etc.) their criteria for manual operator action are met for compliance with III.G.1 to ensure that one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control stations [i.e. valves] is free of fire damage. The licensee does not believe that a fire barrier, cable separation, or an exemption request for the condition in Zone 53-Y is required.

With regard to the RIV DRS fire protection inspection concerns in Fire Zones 98-J and 99-M, the licensee also believes that manual operator actions are acceptable for III.G.1 compliance and that III.G.2 separation is not required.

Pending some resolution of the manual operator actions question, the licensee has implemented compensatory fire watches in 27 fire zones (total in both units) that have manual operator action requirements in the event of a fire. The licensee acknowledges that the pre-fire plans are not the best location to place instructions for manual operator actions required following a fire. A long-term plan is being considered to place all operator action requirements into the annunciator corrective action procedures.