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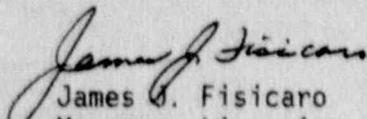
Subject: Arkansas Nuclear One - Units 1 & 2
Docket Nos. 50-313 and 50-368
License Nos. DPR-51 and NPF-6
Fire Barrier Seal Program (TAC #61995 & 61996)

Gentlemen:

In October, 1989, a NRC audit was performed by Mr. Dennis Kubicki (NRR) related to the ANO Fire Barrier Seal Program. At the exit meeting, the inspector requested a narrative description of the ANO program as additional information in order to determine the adequacy of our program. The requested program description is attached for your review.

If additional information is required, please contact my office.

Very truly yours,


James G. Fisicaro
Manager, Licensing

JJF/lw
Attachment

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INTRODUCTION

One purpose of the Fire Protection Group at Arkansas Nuclear One is to maintain a program which supervises the development and installation of fire barrier penetration seals as to minimize the effects of fires on structures, systems and components important to safety in accordance with 10CFR50. The Penetration Seal Program provides for the review and approval of installations and other documentation associated with the sealing of penetrations; additionally, the program provides for the maintenance of that documentation.

ANO is currently performing evaluations of as-built penetration seals located in either fire barriers required to satisfy Appendix R or BTP 9.5-1 (Appendix A). The objective of each evaluation is to substantiate whether an as-built seal is equivalent to a fire tested design and, if not, provide a justification as to the as-built penetration seal's qualification as a fire seal qualified for use in a particular fire barrier. The engineering evaluations are performed in accordance with the guidance as specified in Information Notice 88-04 and Generic Letter 86-10.

An evaluation which provides the justification as to an as-built penetration seal's qualification may not be applicable after any future reworking of that seal and would require additional evaluation to determine future qualification.

Currently, 50% of all silicone form blockouts in both Units 1 and 2 have been evaluated; this equates to approximately 2% of the penetration seals required by Technical Specifications at ANO. The expected completion date of 100% of the penetration seals required by Technical Specifications is December 31, 1991.

Tracking Method

There are four primary mechanisms of tracking installations and other documentation associated with fire barrier penetration seals. They are as follows:

- * Penetration Log Data Base
- * Fire Tested Design Drawings
- * Fire Protection (FP) Drawings
- * Fire Barrier (FB) Drawings

The Penetration Log Data Base is a computerized list of all penetrations located in Technical Specification Fire Barriers which contains pertinent information as it relates to each penetration (i.e., FB drawing, size, type, assigned Fire Tested Design, etc.).

The Fire Tested Design Drawings are typical design drawings which indicate specific criteria for the installation of penetration seals. Each design has been previously qualified by configurations tested under actual fire conditions which have met an approved testing standard as a three hour fire rated penetration seal.

The FB drawings depict Technical Specification fire barriers and corresponding as-built penetrations. These drawings may be used in conjunction with the Penetration Log to determine an as-built penetration's location and relevant elevation with respect to other penetrations on that fire barrier.

The FP drawings are floor plans which identify Technical Specification fire barriers and their location with respect to a Fire Area or Fire Zone. Other fire protection information may be found on these drawings.

Maintenance of the penetration log database is accomplished thru the Fire Protection Group (FPG) via the initiation of a penetration log revision form. The revision form is initiated each time a seal is worked and forwarded to the FPG where it is reviewed and approved by the Penetration Seal System Engineer. If an engineering report exists for an as-built seal, a reevaluation of that report is performed incorporating changes as required. The revision form is then utilized to revise the penetration log.

Revisions to the fire tested designs and FB drawings are also forwarded to the FPG where they are reviewed and approved by the Penetration Seal System Engineer.

As-Built Seal Review

The method of acceptance of an as-built seal in relation to a fire tested design is by as-built verification and engineering evaluation. The as-built verification of a penetration seal considers the following parameters when determining the equivalence of an as-built penetration seal to a fire tested design:

- * Size of the sealed opening -

The as-built seal should not have an overall square area greater than the tested design; however, if this condition is not satisfied and the free sealed area is less than the maximum tested free sealed area, the size of opening is still considered to be acceptable.

- * Size, quantity and proximity of penetrating items -

The size and quantity of the penetrating items must be equal to or less than that of the tested design. The proximity of penetrating items must be equal to or greater than that of the tested design without exceeding the maximum tested free sealed area criteria above. Electrical penetrations must have a cable fill equal to or less than the maximum tested for the design.

- * Orientation of the seal in the barrier -

The orientation of the as-built seal in the barrier must be the same as that of the tested design (i.e., a seal design fire tested in a wall configuration shall only be used in a wall). Exception: a seal design fire tested in a floor configuration may be used in a wall or floor.

- * Seal material and depth -

The seal material and depth of the as-built fire seal must be the same as the fire tested design.

- * Barrier construction (material & thickness) -

The fire barrier material and thickness must be the same as the fire tested design.

When an as-built penetration seal is not equivalent to the fire tested with respect to all the above aspects, an engineering evaluation is required to document and if possible substantiate each deviation. Through the analysis of the deviations, the engineering report will demonstrate whether the as-built seal configuration has a negligible and therefore acceptable impact upon the fire resistive integrity of the fire barrier or whether additional review of the fire barrier as-built penetration seal is required. If initial analysis establishes an impact which could compromise the fire resistive integrity of the fire barrier, the as-built documentation, any additional fire testing and applicable fire protection features shall be reviewed to determine if possible mitigating factors exist which would provide justification as to the acceptability of the penetration. Mitigating factors include:

- * Additional fire seal material -

If the as-built penetration seal has additional fire rated material utilized in the seal configuration, the seal could be determined as being superior to the original fire tested design.

- * Additional fire testing -

The as-built penetration seal may be qualified by the application of one or more approved fire tests available to AP&L. These fire tests will be used to demonstrate the qualification of any identified parameters as mentioned above.

- * Low combustible loading -

A low combustible loading present on either side of the fire seal may present a lower fire hazard to the seal in a intensity and duration which could qualify the seal for use in that barrier.

- * Available automatic fire suppression and/or detection -

If automatic fire suppression and/or detection is available in the area of the barrier, the seal may be qualified for use in that particular fire barrier.

- * Available manual fire suppression -

If manual fire suppression is available in the area of the barrier, then seal may be qualified for that fire barrier.

* Complex configuration -

The configuration of the surrounding area could provide allowances for the use of some questionable seals, for example: the local combustibles and storage, building construction, tortuous propagation paths, curbing, drainage, etc.

Each seal is analyzed based on the merits of its own configuration considering the combination, rather than any one of the above results individually. When determined through an engineering evaluation that the mitigating factors do not provide adequate justification for the qualification of the as-built penetration seal, corrective action is taken (i.e., condition report, reworking of the seal, etc.). No additional action beyond an engineering report is required where a penetration seal analysis has determined "negligible" impact and/or acceptability of the deviated seal configuration.