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MIDDLE SOUTH UTILITIES SYSTEM

May 10, 1988

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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: Waterford Steam Electric Station - Unit Number 3
Docket Number 50-382
Operating License NPF-38
Annual Fire Protection Report - 1987

Dear Sir:

Attached is the 1987 Annual Fire Protection Report as required by condition 2.C.9.c of the subject Operating License. This report is for calendar year 1987, and describes changes made to the approved fire protection program (as discussed in the Final Safety Analysis Report (FSAR) through Amendment 36 and approved in the Safety Evaluation Report through Supplement 9) which were determined through fire protection evaluations to not reduce the level of fire protection at Waterford 3, nor otherwise require prior NRC approval.

Should you have any questions regarding this report, please contact Chadi D. Groome at (504) 595-2846.

Very truly yours,

R.F. Burski
Nuclear Safety & Regulatory Affairs Manager

RFB:CDG:ssf

Attachment

cc: R.D. Martin, J.A. Calvo, D.L. Wigginton, NRC Resident Inspectors Office, E.L. Blake, W.M. Stevenson

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Louisiana Power & Light Company
Waterford Steam Electric Station - Unit Number 3

1987 ANNUAL FIRE PROTECTION REPORT

I. Evaluation of Floor Covering Material Standards

Section 9.5.1.3.1 of the Waterford 3 Final Safety Analysis Report (FSAR) indicates that interior finish materials meet certain numerical criteria (indicated in parentheses) for flame spread (25), fuel contribution (25) and smoke development (50), as described in the ASTM E-84 Test "Surface Burning Characteristics of Building Material". The carpeting industry no longer uses this test to rate its products, using instead the "Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source" (ASTM E-648; NFPA 253). In order to replace the carpeting in the Control Room it was necessary to compare the currently used standards to LP&L's commitments to insure that the level of fire protection at Waterford 3 would not be reduced.

A critical radiant flux rating of at least 0.45 watts per square centimeter was determined to provide an equivalent level of fire protection as ratings produced by ASTM E-84. This was principally based on the following:

1. NFPA 101 - 1985 suggests a correlation between the ASTM E-84 standard and the critical radiant flux standard, stating in section 6.5.3 that Class I floor coverings have a minimum critical radiant flux of 0.45 watts per square centimeter and in Appendix G that Class I floor coverings are considered to have a flame spread of 25.

2. NFPA 101 stipulates minimum critical radiant flux criteria based on occupancy classification. Health care facilities have the most stringent requirement of 0.45 watts per square centimeter. The Department of Health, Education and Welfare, Standard on Flammability of Floor Coverings - Chapter 8-40 imposes the same critical radiant flux requirements as NFPA 101.

3. National Bureau of Standards report 76-1013, "Flame Spread of Carpet Systems Involved in Room Fires" demonstrated that carpet which passes the Federal Flammability Standard FF-1-70 is not likely to become involved in a fire until the room reaches or approaches flashover. A critical radiant flux of 0.45 watts per square centimeter is more stringent than the requirements of Federal Flammability Standard FF-1-70.

The use of the critical radiant flux as stated above was discussed with the NRR during a telephone conference call in January 1987. The carpeting in the Control Room was replaced based on the fire protection evaluation and NRR conference call, and the FSAR was revised to indicate the use of the critical radiant flux rating.

II. Use of PVC Jacketed Cable

During installation of a clock in the Control Room, a thirty foot length of PVC jacketed cable was added to "nonessential" panel CP3. The cable sends a low voltage signal from a remote control switch on CP3 to the clock located on top of CP3. LP&L has committed to the use of cables qualified by the IEEE-383 or equivalent flame tests, but the subject cable is not qualified. It has been determined, however, that use of this cable has not reduced the level of fire protection because:

1. The cable represents an insignificant increase in combustible loading when considered on an area wide or panel basis;

2. CP3 is "non-essential" and is provided with early warning automatic smoke detectors. There are two adjacent essential control panels, but they are also provided with smoke detection;

3. Control Room is a constantly attended area; and

4. The area has a low combustible loading of less than 30 minutes.

III. Extension of Reactor Coolant Pump Lubricating Oil Fill Lines

Existing oil fill lines were extended to address ALARA and safety concerns related to maintenance personnel climbing into the reactor coolant pump (RCP) cells to add small quantities of oil to the upper and lower RCP lubricating oil reservoirs.

Additional oil fill tubing was routed from the top of shield wall to the oil reservoir fill points of all four RCPs. The addition of lubricating oil was not considered a significant fire hazard since the tubing would only contain a minimal amount of oil, and would be added by approved five (5) gallon safety cans. In addition, the seismically supported tubing will only contain oil during the brief fill period. Detection and suppression are present in the area, and additional defense-in-depth is provided by administrative controls of transient materials, replacement of oil level transmitters with more reliable indicators and by capping the oil fill lines when not in use.

IV. Modification of Reactor Coolant Pump Oil Collection System

A portion of the Reactor Coolant Pump (RCP) Oil Collection System (enclosure pan number 3) was redesigned and relocated to facilitate maintenance of the RCP seals and thereby reduce the exposure time of the maintenance personnel. This modification was effected on all four RCPs. As the new enclosure was designed in accordance with the criteria of 10CFR50 Appendix R, and performs the same function as the original enclosure, this modification was implemented without prior NRC approval, in accordance with License Condition 2.C.9.c.

V. Deviations From Tested Configurations - One Hour Wrap

During fire wrap surveillance and repair activities, several deviations from tested configurations of the one hour Hymac Wrap System were identified. These deviations were evaluated and determined not to impact the integrity and continuity of the fire rated assemblies. Deviations involved 2 inch and 9 inch anchor bolt spacing requirements, wrapping of interferences, and stitch space requirements for wrap assemblies. The evaluation involved field inspection of each deviation by a qualified fire protection engineer. Deviations were repaired, except for those which were minor and did not impact the integrity of the assembly.

VI. Evaluation of Non-Rated Penetration Seals

SSER 8 identified a deviation from Section D.1 of Appendix A to BTP APCSB 9.5.1 and Section II.G.2 of Appendix R to 10CFR50 concerning penetration seal assemblies that have not been tested to ASTM E-119 criteria. This deviation approved the use of fiber board roof insulation and 3/8 inch angle iron on both sides of a wall to fill the 2 inch gap between certain fire walls and ceilings located in the Reactor Auxiliary Building.

The use of an alumina-silica refractory board was evaluated to be acceptable in lieu of the roof insulation principally due to its qualification by fire tests for use in three (3) hour fire rated penetration seals. The use of the refractory board and 3/8 inch angle iron is considered at least equivalent to the configuration approved in the deviation.

VII. Substitution of Siltemp Thermal Barrier Cloth for Klever 600/6 or J.P. Stevens #332 Cloth in One (1) Hour Fire Rated Wrap Assemblies

The tested configuration of one (1) hour fire rated wrap assemblies installed at Waterford 3 consists of Siltemp thermal barrier on the exposed side and Klever 600/6 or J.P. Stevens #332 cloth on the non-exposed side, with an alumina-silica refractory fiber in blanket form sandwiched between the two cloths. A fire protection evaluation was performed to support the use of Siltemp on both the exposed and non-exposed surfaces. The evaluation determined that the fire rating of the assembly is due to the internal refractory material. The purpose of the exterior cloth is to prevent the internal blanket material from being dislodged before, during or after a fire and to provide a water repellent barrier. Therefore, the use of the Siltemp cloth which provides thermal protection in excess of that provided by either of the other two cloths, on both sides of the assembly was determined to provide at least an equivalent level of fire protection as the tested configuration.

VIII. Unwrapped Cable Tray Supports

One of the methods specified in 10CFR Appendix R for protection of safe shutdown capability (Paragraph III.G.2.C) is enclosing cable, equipment and associated nonsafety circuits of one redundant train in a fire barrier having a one hour rating, and providing area wide detection and automatic suppression. During routine fire wrap repair operations, it was discovered that a number of raceway supports were not completely wrapped in accordance with this criterion.

The fire wrap installation of concern can be described typically as a configuration where the protective wrap around a raceway was terminated upon contact with the web portion of a 4-6 inch I-beam supporting the raceway, thereby allowing the bottom flat of the beam to be exposed to the fire area. While this condition is not consistent with the previously described Appendix R criterion, a fire protection evaluation demonstrated that in areas equipped with detection and suppression, the installed configuration does not result in a reduced level of fire protection and can therefore be left as is. This conclusion is based on the premise that in these areas, the redundant safe shutdown cables are sufficiently protected through a number of mechanisms (i.e., defense-in-depth), so that this installation irregularity does not constitute a significant breach in the overall protection scheme. The concern raised by this fire wrap configuration is that of transfer of heat to the interior of the raceway through localized heating of the raceway support. In the event of a fire, and assuming no fire brigade response, the existing suppression system would mitigate or eliminate any adverse effects of localized heating of the raceway support. There are a number of fire areas which have been granted a deviation from the installed detection and suppression specifications of Paragraph III.G.2.C. These areas were inspected, and repairs made to improperly installed wrap to bring them into conformance with Appendix R specifications. This situation was discussed via telephone with representatives of the Office of Nuclear Reactor Regulation and Region IV on August 7, 1987. During that conversation, the staff indicated that LP&L appropriately addressed the issue, that the corrective actions were acceptable, and that this configuration is also typical at other nuclear facilities.

IX. Combustible Foam Expansion Joint

Information Notice No. 86-35, "Fire in Compressible Material at Dresden Unit 3" prompted an evaluation of a combustible polyethylene foam used as an expansion joint on both sides of the primary containment wall between the steel of the primary containment wall and the concrete foundation. The foam on the annulus side of the primary wall is approximately four (4) inches wide and three feet deep. The foam on the containment side of the primary wall is approximately one (1) inch wide and seven (7) inches deep.

The fire protection evaluation determined that the foam within the annulus required corrective action prior to the change in the annulus detection system (prior NRC approval received via Technical Specification amendment). This was accomplished by covering the foam with noncombustible Dow Corning 3-6548 silicon foam, the same material used in three hour fire rated penetration seals. This evaluation also determined that due to the low additional combustible loading and small exposed surface area (one inch) no corrective action was required for the area on the containment side of the wall. The FSAR was revised to indicate the presence of the additional combustible material in containment.