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Georgia Power
24x7 electric system

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May 3, 1993

Docket Nos. 50-321
50-366

HL-3270
005315

U.S. Nuclear Regulatory Commission
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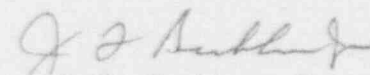
Edwin I. Hatch Nuclear Plant
Special Report 1-93-003
Fire Rated Assemblies Inoperable for Greater Than 14 Days
Result in Special Report as Required by Fire Hazards Analysis

Gentlemen:

In accordance with the requirements of the Unit 1 and Unit 2 Technical Specifications and Fire Hazards Analysis, Georgia Power Company is submitting the enclosed Special Report concerning an event wherein a fire rated assembly was inoperable for longer than 14 days.

If you have any questions in this regard, please call this office.

Sincerely,


J. T. Beckham, Jr.

JKB/cr

Enclosure: Special Report 1-93-003

cc: Georgia Power Company
Mr. H. L. Sumner, General Manager - Nuclear Plant
NORMS

U.S. Nuclear Regulatory Commission, Washington, D.C.
Mr. K. Jabbour, Licensing Project Manager - Hatch

U.S. Nuclear Regulatory Commission, Region II
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Edwin I. Hatch Nuclear Plant

Special Report 1-93-003

Fire Rated Assemblies Inoperable for Greater Than 14 Days
Result in Special Report as Required by Fire Hazards Analysis

A. Requirement for Report

This report is required by the Plant Hatch Technical Specifications, section 6.9.2, and the Plant Hatch Fire Hazards Analysis (FHA), appendix B, section 1.1.1. Technical Specifications section 6.9.2 requires that special reports for fire protection equipment operating and surveillance requirements be submitted as required by the FHA and its appendix B. FHA, appendix B, section 1.1.1, states that fire rated assemblies separating portions of safety related fire areas or separating redundant systems important to safe shutdown within a fire area shall be operable. Action Statement (a) of section 1.1.1 allows a fire rated assembly to be inoperable for up to 14 days provided the appropriate fire watch is established. Action Statement (b) requires that a special report be prepared and submitted to the NRC within 30 days if the fire rated assembly is not restored to an operable status within the allowed 14-day time limit.

On 3/22/93, the nominal one hour fire barrier assemblies (i.e., fire wrap material) installed to reduce the combustible loading in the unit common River Intake Structure were determined to be inoperable during the performance of plant surveillance procedure 42SV-FPX-007-0S, "Cable Tray Surveillance - Kaowool Material." On 4/5/93, at the end of the allowed 14-day time limit, some of the fire rated assemblies had not been restored to an operable condition. Additionally, it was discovered on 4/5/93 that the fire rated assemblies on several River Intake Structure cable trays, breached on 3/1/93 to pull cables per Design Change Request 92-144, had not been restored properly on 3/12/93. Therefore, these fire rated assemblies had been inoperable for greater than the allowed 14 days.

B. Unit Status at Time of Events

On 4/5/93, Unit 1 was in a scheduled refueling outage with the core unloaded and Unit 2 was in the Startup Mode.

C. Description of Events

On 3/22/93, plant Quality Control personnel were inspecting the fire resistive assemblies (i.e., fire wrap material) installed to reduce the combustible loading in the River Intake Structure per plant surveillance

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procedure 42SV-FPX-007-0S, "Cable Tray Surveillance - Kaowool Material." This procedure is performed at a frequency of once per 18 months to meet the surveillance requirements of the FHA, appendix B, section 2.1.1.a. Inspection personnel discovered the fire wrap material was not installed on the cable trays as required by plant design drawing H-40234, "Intake Structure - EL 111' 0" Appendix 'R' - Fire Protection Kaowool Installation - Plan & Details," and plant procedure 42FP-FPX-011-0S, "Cable Tray/Conduit Fire Protection Material Installation and Repair." Specifically, gaps were found between sections of the fire wrap material such that portions of the cable tray were visible. The design drawing requires that the butt joints of each successive layer of the fire wrap material be separated by at least 18 inches to prevent any gaps at the joints from forming a direct path for fire to reach the cable tray. Additionally, personnel found the ends of the cable trays were not wrapped in the configuration shown on the design drawing. The edges of the section of fire wrap material on the ends of the cable trays were found to overlap the wrap on the main run of the cable trays whereas the design drawing requires exactly the opposite configuration. It appears at least some of these deficient conditions, which compromised the nominal one hour fire barrier rating of the material, have existed since the fire rated assemblies were installed on the River Intake Structure cable trays in 1984.

As required by the surveillance procedure, Quality Control personnel initiated a Deficiency Card documenting these conditions. On 3/22/93, licensed Operations personnel, upon receipt of the Deficiency Card, declared the fire rated assemblies in the River Intake Structure inoperable. Limiting Condition for Operation (LCO) 1-93-272 was initiated as required by plant administrative control procedures and an hourly fire watch was established as required by the FHA, appendix B, section 1.1.1. On 4/5/93, some of the fire rated assemblies in the River Intake Structure had not been restored to an operable status due to a shortage of the necessary fire wrap material.

On 4/5/93, personnel repairing deficient fire rated assemblies in the River Intake Structure discovered that the fire wrap material on several safety related cable trays had not been restored properly following their breach on 3/1/93 to pull cables per Design Change Request 92-144. Specifically, only half of the required fire wrap material had been placed around the cable trays on 3/12/93 when the fire rated assemblies were restored following completion of design change work activities.

Drawing H-40234 and procedure 42FP-FPX-011-0S require four, 1/2-inch thick layers (or, alternatively, two, one-inch thick layers) of the fire wrap to be used to wrap the cable trays in the River Intake Structure. Two inches of the fire wrap material are necessary to achieve the necessary fire resistive barrier. Instead, personnel replacing the fire rated assemblies on 4/5/93 found that only two, 1/2-inch thick layers of the fire wrap had been used when the fire rated assembly had been restored on several cable trays on 3/12/93. Consequently, the fire rated assemblies on these cable trays had not been restored to an operable status on 3/12/93 and, when discovered on 4/5/93, had exceeded the allowed 14-day time limit for restoration. Furthermore, the required hourly fire watch was not performed from 3/12/93 to 3/22/93 as the fire rated assemblies were thought to have been restored to an operable status. A fire watch was established as a result of the deficiencies found during the performance of surveillance procedure 42SV-FPX-007-0S.

Upon discovery of the improperly wrapped River Intake Structure cable trays, personnel initiated a Deficiency Card as required by plant administrative control procedures. Since, in effect, all safety related River Intake Structure cable tray fire rated assemblies had been declared inoperable on 3/22/93 and an hourly fire watch established as required by the FHA, no further actions were required in response to these deficient conditions.

D. Cause of Events

These events were caused by inadequate fire wrap installation procedures and personnel error. Untimely discovery of these deficient conditions was the result of personnel error.

The River Intake Structure cable tray fire rated assemblies were deficient as a result of an inadequate installation procedure and personnel error. Plant procedure HNP-6908, "Installation and Repair of Fire Breaks & Penetrations: Fire Barriers and Seals," used to install the original River Intake Structure cable tray fire rated assemblies in 1984, was deficient in that it did not provide instructions on how to wrap the ends of the cable trays. It also was deficient in that it required no post-installation inspection of the wrapped cable trays even though one was required for the installation of other fire rated assemblies (e.g., penetration seals, cable tray fire breaks, Nelson Frames) covered by the procedure. Personnel installing the fire rated assemblies failed to follow the requirements of the installation procedure in that they did not separate the butt joints of each successive layer of the fire wrap by the distance specified in the

procedure. As a result of these procedural and personnel deficiencies, the fire rated assemblies were installed and placed into service with gaps between sections and the ends of the cable tray not wrapped properly. These deficiencies rendered the fire rated assemblies inoperable.

The deficiencies associated with the improperly wrapped cable tray ends should have been discovered during previous 18-month inspections of these fire rated assemblies. Although the inspection would not have prevented these deficiencies, it should have resulted in their discovery and repair in a more timely manner. However, due to personnel error and less than sufficiently detailed procedures, these deficiencies were not noted during previous inspections. Similar problems with the performance of fire protection equipment surveillances resulted in the recent transfer of the responsibility for their performance to Quality Control personnel as a corrective action associated with Special Report 1-91-007. This was the first performance of surveillance procedure 42SV-FPX-007-0S using Quality Control personnel.

The River Intake Structure cable trays were improperly wrapped on 3/12/93 as a result of personnel error. Contributing to this event was a less than adequate installation procedure. Personnel restoring the fire wrap material on these cable trays failed to follow the requirements of plant procedure 42FP-FPX-011-0S. This procedure required the cable trays to be wrapped with four, 1/2-inch thick layers of the fire wrap material. However, personnel erroneously used only two, 1/2-inch thick layers to wrap the cable trays. The installation procedure was less than adequate in that it did not require any inspections during installation of the fire wrap. Although the procedure did require a post-installation inspection to be performed by Quality Control personnel, a post-installation inspection can not determine if the proper number of layers has been installed. Consequently, the procedure should have required inspections to be performed during, as well as following, the installation of the fire wrap material to ensure the correct amount of material had been installed.

E. Analysis of Event

The safety-related equipment contained in the intake structure consists of the Plant Service Water (PSW) pump motors, the Residual Heat Removal Service Water (RHRSW) pump motors, the standby PSW pump motor, and the associated circuitry, piping, valves, and supports for the above components. The PSW pump motors are required to supply cooling water to ensure the operation of specific safety-related equipment in the event of

a design basis accident or transient. The PSW system supplies cooling water to safety-related equipment such as the diesel generators, residual heat removal (RHR) pump coolers, and emergency core cooling system equipment room coolers which are required for a safe reactor shutdown following a design basis accident or transient. The PSW system also supplies cooling water to non-safety related equipment during normal operation. During a design basis accident, the non-safety related equipment is designed to be isolated from the PSW system, and cooling water is supplied only to safety-related equipment.

The RHRSW system is required to provide cooling water to the RHR system heat exchangers and is required to operate for a safe reactor shutdown following a design basis accident or transient. The RHRSW system is required to operate whenever the RHR heat exchangers are required to operate in the shutdown cooling mode or in the suppression pool cooling and spray mode of the RHR system. In the shutdown cooling mode, the RHRSW system provides cooling water to the RHR system to ensure decay heat removal from the reactor core. The RHRSW system removes heat from the suppression pool to limit the suppression pool temperature and primary containment pressure following a loss of coolant accident (LOCA).

In this event, the nominal one-hour fire barrier assemblies (i.e., Kaowool fire wrap material) was found to be degraded. Upon discovery of this deficiency, an hourly fire watch was established for the area in accordance with the FHA, appendix B, section 1.1.1.

The fire loading in the river intake structure is not significant and the design basis fire duration is less than 15 minutes. The primary combustibles located in this area are the lubricating oil in the PSW and RHRSW pump motors and cable insulation. Active protection for this area is provided by a thermal detection system and each of the PSW and RHRSW pump motors is provided with a fixed wet pipe automatic water spray system. The Kaowool fire wrap material was installed on the cable trays to reduce the combustible loading as part of the 10 CFR 50.48, Appendix R modifications. The Kaowool installation allowed an exemption from the requirements on Paragraph III.G.2 to the extent that an area wide automatic fire suppression system was not required for the entire River Intake Structure. The degraded condition of the Kaowool fire wrap due the defects in installation and material condition would not have resulted in a significant increase in the combustible loading for this area.

In considering the permanent combustible materials, a fire, if one should occur, would most likely be associated with a PSW or RHRSW pump motor. While ignition of the lubricating oil in the closed sumps is extremely unlikely, the automatic water spray system is designed to quickly extinguish such a fire. Previous evaluations have shown that the water spray will not adversely affect the remaining pump motors. The most likely occurrence of a fire in this area is associated with transient combustibles, such as that involved in changing the lubricating oil in the pump motors. However, current administrative controls require a continuous fire watch to be established when transient combustibles are in the area. Portable carbon dioxide and dry chemical fire extinguishers, along with hose stations, are provided for manual fire fighting. Consequently, if a fire involving transient combustibles should occur, it would be immediately detected and promptly extinguished.

Based on the above information, it is concluded that this event had no adverse effect on nuclear safety.

F. Corrective Actions

On 3/22/93, the fire rated assemblies in the River Intake Structure were declared inoperable, LCO 1-93-272 was initiated, and an hourly fire watch of the affected areas was established as required by plant procedures and the Plant Hatch FHA.

Maintenance Work Order 1-93-1230 was written to repair the deficient fire rated assemblies. Work was initiated on 4/1/93, but could not be completed by 4/5/93 because of a shortage of the necessary fire wrap material. Additional material has been received on-site and repairs of the fire rated assemblies in the River Intake Structure will be completed by 5/7/93.

Procedure HNP-6908 was deleted and replaced in part with procedure 42FP-FPX-011-0S in 1985. However, procedure 42FP-FPX-011-0S is in itself deficient in that it does not provide instructions on how to wrap the ends of cable trays, and some of its instructions do not match the installation details on design drawing H-40234. Therefore, procedure 42FP-FPX-011-0S will be revised by 6/30/93 to correct these deficiencies and to require quality control inspections to be conducted at various steps during the installation of fire wrap material on River Intake Structure cable trays. The current repair of fire rated assemblies on the cable trays in the River Intake Structure is being performed per the requirements of design drawing H-40234.

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Responsibility for the performance of surveillance procedure 42SV-FPX-007-0S, and similar fire protection equipment inspections, has been transferred to Quality Control personnel as part of an internal improvement program.

Personnel responsible for restoring the fire rated assemblies on River Intake Structure cable trays on 3/12/93 have been counseled regarding the need to read, understand, and follow all procedural requirements governing their work activities.

Personnel responsible for inadequate performance of surveillance procedure 42SV-FPX-007-0S have been subjected to disciplinary action under GPC's positive discipline program.

An expanded assessment will be performed by 7/31/93 to determine if further enhancements or corrective actions are warranted in the fire protection surveillance program. This assessment will be performed by an independent, third party evaluator knowledgeable in fire protection programs.