UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

OCTOBER 25, 2002

Southern Nuclear Operating Company, Inc.
ATTN: Mr. J. B. Beasley, Jr.
Vice President
P. O. Box 1295
Birmingham, AL 35201-1295

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT - NRC INSPECTION REPORT 50-348/02-06 AND 50-364/02-06

Dear Mr. Beasley:

On September 13, 2002, the Nuclear Regulatory Commission (NRC) completed a triennial fire protection inspection at your Farley Nuclear Plant. An interim exit was held with Mr. D. Grissette and other members of your staff on September 13, 2002, to discuss the results of that effort. Following completion of additional review in the Region II office, a final exit was held with Mr. D. Grissette, and other members of your staff on October 25, 2002. The enclosed report documents our findings from this inspection.

The inspection examined the effectiveness of activities conducted under your license relating to implementation of your NRC-approved fire protection program. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the inspectors identified three issues of very low safety significance (Green). Each of these issues was determined to involve a violation of NRC requirements. One of the issues, involving a failure to properly evaluate and implement plant changes without seeking prior Commission approval, was also characterized as a Severity Level IV violation. However, because of their very low safety significance and because they have been entered into your corrective action program, the NRC is treating these issues as Non-Cited Violations (NCVs), in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny any NCV in this report, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region II; Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Joseph M. Farley Nuclear Plant.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be publicly available in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Charles R. Ogle, Chief
Engineering Branch 1
Division of Reactor Safety

Docket Nos.: 50-348 and 50-364
License Nos.: NPF-2 and NPF-8

Enclosure: NRC Inspection Report 50-348/02-06 and 50-364/02-06
w/Attachment

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-348 and 50-364
License Nos.:	NPF-2 and NPF-8
Report Nos.:	50-348/02-06 and 50-364/02-06
Licensee:	Southern Nuclear Operating Company, Inc.
Facility:	Farley Nuclear Plant, Units 1 and 2
Location:	7388 N. State Highway 95 Columbia, AL 36319
Dates:	August 12 -16, 2002 (Week 1) September 9 - 13, 2002 (Week 2)
Inspectors:	D. Billings, Resident Inspector, Oconee Nuclear Station (Week 1 only) N. Merriweather, Senior Reactor Inspector, Region II (Week 1 only) C. Payne, Fire Protection Team Leader, Region II (Week 2 only) C. Smith, P. E., Senior Reactor Inspector, Region II (Week 2 only) S. Walker, Reactor Inspector (Week 2 only) G. Wiseman, Fire Protection Inspector, Region II (Lead Inspector) F. Wyant, Contractor, Sandia National Laboratory
Approved by:	Charles R. Ogle, Chief Engineering Branch 1 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000348-02-06, IR 05000364-02-06, Southern Nuclear Operating Company, Inc., on 08/12/2002 - 09/13/2002, Joseph M. Farley Nuclear Plant, Units 1 & 2, triennial baseline inspection of the fire protection program.

The inspection was conducted by a team of regional engineering inspectors, the Oconee resident inspector, and one electrical contractor from Sandia National Laboratory. Three Green findings, each a Non-Cited Violation (NCV), were identified. The significance of issues is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

Inspection Identified Findings

Cornerstone: Mitigating Systems

- Green. A Severity Level IV NCV of Farley Unit 1 Operating License Condition 2.C.(4) and Farley Unit 2 Operating License Condition 2.C.(6) was identified for the licensee making a change to the approved fire protection program (FPP) without prior Commission approval. On January 20, 1992, and February 20, 1998, the licensee inappropriately used the 10 CFR 50.59 change process to revise the FPP to accept five fire areas (Fire Areas 51, 1-004, 1-042, 2-004, and 2-043) that did not satisfy the fire detection and suppression requirements of 10 CFR 50, Appendix R, Section III.G.3. These five fire areas contained unprotected, redundant electrical cables for both main control room (MCR) air conditioning (A/C) units. On Unit 1, the change decreased the effectiveness of the program in the event of a fire, while on Unit 2 the change adversely affected the ability to achieve and maintain safe shutdown (SSD) in the event of a fire.

  The team concluded that the finding had a credible impact on safety because the licensee's failure to properly evaluate changes to the FPP could adversely affect or degrade the reliability of SSD capability from the MCR. However, the team determined that this finding was of very low significance because the overall SSD capabilities in the affected fire areas and related FFP features were still adequate to ensure SSD capability. Therefore, this finding is characterized as Green (Section 1R05.02).

- Green. An NCV of 10 CFR Part 50, Appendix B, Criterion XVI was identified for the licensee's failure to revise promptly plant procedure AOP-29.0, Plant Fire, to incorporate the use of alternative shutdown (ASD) procedures for Fire Areas 51, 1-004, 2-004, and 2-043, as specified in Production Change Notice (PCN) No. B-90-0-7074 dated January 20, 1992.

This finding was more than minor since it affected the Reactor Safety Cornerstone objective to ensure the availability, reliability, and capability of SSD systems relied upon to respond to a fire initiating event and to prevent undesirable consequences. Required operator actions may not have been accomplished in a timely manner because an approved plant procedure was not promptly revised for mitigating a fire in four fire areas. This finding is characterized as having very low safety significance (Green) because it did not affect detection, manual suppression capability, automatic suppression capability, fire barriers, or 20-foot separation. Further, upon the MCR becoming uninhabitable during a fire, it would likely have been evacuated and ASD procedures used to mitigate the effects of the fire (Section 1R05.02).

- Green. An NCV of 10 CFR 50.48 and Farley Unit 1 Operating License Condition 2.C.(4) was identified for the licensee's failure to provide fluid confinement protection features, as required by the listing agency (Factory Mutual Data Sheet 5-4/14-8), in Train A load center (LC) Room 335 (Fire Area 1-041.) After replacing an Askarel-type insulating fluid with a silicone-type insulating fluid in two separate 600V transformers in Train A LC Room 335, the licensee failed to provide physical fire area boundary spill confinement protection features (curbs or ramps) at Doors No. 324 and 321, to prevent the spread of fluid fire resulting from a faulted transformer to adjacent fire areas.

  This finding was determined to be more than minor because it can be viewed as a precursor to a significant event where a combustible liquid fire in one fire area could potentially cause damage to the redundant train of SSD cables in an adjacent fire area. However, based on the self-extinguishment properties of the silicon-type insulating fluid, a fire in LC Room 335 involving the 600V transformer fluid would most likely extinguish prior to spreading into the adjacent fire area and hence, any damage would be confined to a single division (Train A) of SSD equipment. Thus, the finding did not affect the 3-hour rated fire barrier separating redundant SSD functions. Accordingly, this finding is of very low safety significance (Green) (Section 1R05.09).

Report Details

1. REACTOR SAFETY
Cornerstones: Initiating Events, Mitigating Systems

1R05 FIRE PROTECTION

.01 Systems Required To Achieve and Maintain Post-Fire SSD Circuit Analysis

a. Inspection Scope

The team evaluated the licensee's FPP against applicable requirements, including License Condition C.(4), Unit 1 and C.(6), Unit 2, Fire Protection; Title 10 of the Code of Federal Regulations Part 50 (10 CFR 50), Appendix R; Appendix A of Branch Technical Position (BTP) Auxiliary and Power Conversion Systems Branch (APCSB) 9.5-1; 10 CFR 50.48; related NRC Safety Evaluation Reports (SERs); and plant Technical Specifications (TS). The team evaluated all areas of this inspection, as documented below, against these requirements.

The team used the licensee's Individual Plant Examination for External Events (IPEEE) and in-plant tours to select four risk significant fire areas for inspection. The four fire areas selected were:

- **FIRE AREA 1-006- U1 COMPONENT COOLING WATER (CCW) PUMP AND HEAT EXCHANGER ROOM:**

This fire area included rooms 185, 189, 190, 191, 192, 193, 194, 195, 199, 241, 242, and 243. The area extends from the 100'- 0" elevation to the 121'- 0" elevation of the Auxiliary Building (AB). The licensee characterized this area as a 10 CFR 50, Appendix R, III.G.2 area. It contained both trains of motor-driven auxiliary feedwater (AFW) pumps, as well as both trains of CCW pumps. An automatic pre-action fire suppression system was provided in this area and ionization detectors were installed in the area to provide warning of fire.

A significant fire in this area would require the shutdown of the unit from the MCR and additional manual, operator actions at local control stations.

- **FIRE AREA 1-034, U1 TRAIN B ELECTRICAL PENETRATION ROOM:**

This fire area included Rooms 334 and 317. The area extends from the 139'- 0" elevation to the 155'- 0" elevation of the AB. The licensee characterized this area as a 10 CFR 50, Appendix R, III.G.2 area. It contained the motor control center (MCC) 1V, the Cable Spreading Room (CSR) air handling unit (AHU), and filtration system equipment. An automatic fire suppression system is not provided for this fire area (per exemption request 1-35 and approved in NRC SER dated September 10, 1996). Smoke detectors were installed in the area to provide warning of fire.

A significant fire in this area would require the shutdown of the unit from the MCR.

- **FIRE AREA 1-040, U1 CABLE SPREADING ROOM:**

  This fire area included Room 318. The area extends from the 139'- 0" elevation to the 155'- 0" elevation of the AB. The licensee characterized this area as a 10 CFR 50, Appendix R, III.G.3 area. It contained vital, redundant power and control cables required to accomplish SSD from the MCR. An automatic fire suppression system was provided in this area and ionization detectors were installed to provide warning of fire. No floor drains were provided.

  A significant fire in this area would involve the alternate shutdown (ASD) of the unit from the hot shutdown (HSD) panels remotely located in Rooms 254 (Fire Area 1-012) and 202 (Fire Area 1-015) on elevation 121'- 0" of the AB.

- **FIRE AREA 1-041, U1 TRAIN A LOAD CENTERS/SWITCHGEAR AND MG SET ROOMS:**

  This fire area included Rooms 335, 343, and 346. The fire area extends from the 139'- 0" elevation to the 155'- 0" elevation of the AB. The licensee characterized this area as a 10 CFR 50, Appendix R, III.G.1 area. It contained Train A electrical power supplies to SSD equipment and associated switchgear. Ionization detectors were installed in the area to provide warning of fire. Heat detectors were installed in each cabinet of the load centers and switchgear which actuate an in-cabinet CO_2 gaseous fire suppression system in the event of fire.

  A significant fire in this area would require the shutdown of the unit from the MCR.

  The team reviewed the licensee's fire protection report and ASD capability report to determine the systems required to achieve post-fire SSD. The team selected several SSD systems to review for fire protection adequacy. The team also reviewed the safe shutdown equipment list (SSEL), system flow diagrams, and the fire area hazards analysis in the updated Farley Nuclear Plant (FNP) Updated Final Safety Analysis Report (UFSAR) for each of the four selected fire areas to evaluate the completeness and adequacy of the fire protection report and the systems relied upon to mitigate fires in the selected fire areas. Specific licensee documents and drawings reviewed during the inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

.02 Fire Protection of SSD Capability

a. Inspection Scope

The team reviewed Appendix 9B, Fire Protection Program, of the FNP UFSAR and plant fire prevention/combustible hazards administrative control procedures for the FPP. This review was to verify that the objectives established by the NRC-approved FPP were satisfied. The team also toured the selected plant fire areas observing the licensee's

implementation of these procedures. The team also reviewed the FPP quarterly summary reports as well as the plant fire emergency/incident reports resulting from fire, smoke, sparks, arcing, and equipment overheating incidents for the years 2000-2001. This review was conducted to assess the effectiveness of the fire prevention program and to identify any maintenance or material condition problems related to fire incidents. Additionally, the team reviewed design control procedures to verify that plant changes were adequately reviewed for the potential impact on the fire protection program, SSD equipment, and procedures.

The separation of systems necessary to achieve SSD was also evaluated, and fire protection features were investigated to determine if their condition was adequate to satisfy the separation and protection requirements of 10 CFR 50, Appendix R, Section III.G. On a sample basis, the adequacy of separation provided for the power and control cabling of redundant trains of shutdown equipment was evaluated. The evaluation focused on the cabling of selected components for the chemical and volume control system (CVCS), the AFW system, the main steam (MS) system, the CCW system, and the service water (SW) system. Additionally, cabling of valves making up high-low pressure interfaces in the reactor coolant system (RCS) were evaluated as were twenty, electrical distribution system (EDS) panels. This evaluation included a sampling of components whose inadvertent operation due to fire could adversely affect post-fire SSD capability. The adequacy of separation and protection provided for cables of equipment associated with essential SSD functions was based on the following sources of information:

- Cable routing information obtained from the licensee,
- Observations made by inspection team during plant tours, and
- Discussions with plant personnel.

The team also toured the plant's primary fire brigade staging and dress-out areas to assess the condition of fire fighting and smoke control equipment. Fire brigade personal protective equipment located in brigade staging area lockers in the turbine building was reviewed to evaluate equipment accessibility and functionality. Additionally, the team examined whether backup emergency lighting was provided for access pathways to and within the fire brigade staging and dress-out areas in support of fire brigade operations should a power failure occur during the fire emergency. The team also observed whether emergency exit lighting was provided for personnel evacuation pathways to the outside exits as identified in the National Fire Protection Association (NFPA) 101, Life Safety Code. The adequacy of the fire brigade self-contained breathing apparatus (SCBAs) was reviewed as well as the availability of supplemental breathing air tanks. Team members also toured the selected fire areas and compared the associated fire fighting fire zone data sheets with as-built plant conditions. This was done to verify that they were consistent with the fire protection features and potential fire conditions described in the UFSAR.

The team reviewed the fire brigade response procedure, fire brigade organization, training and drill program administration procedures. Fire drill critiques of operating shifts for the period 2001-2002 were reviewed to verify that fire brigade drills had been conducted in high fire risk plant areas. Fire brigade training/drill records for the same period were also reviewed to verify that the fire brigade personnel qualifications, brigade

drill response time, and brigade performance met the requirements of the licensee's approved FPP. Additionally, the team observed a fire brigade drill to verify the licensee's implementation of the fire brigade organization, training, and drill program administration procedures. The team observed the actions of the fire brigade, fire drill monitors, and attended the drill critique.

Design control procedures were reviewed to verify that plant changes were adequately reviewed for the potential impact on the FFP, SSD equipment, and procedures as required by FNP Operating License Conditions 2.C.(4) for Unit 1 and 2.C.(6) for Unit 2. Additionally, the team performed an independent technical review of the licensee's 10 CFR 50.59 evaluation completed in support of PCN No. B-90-0-7074, approved January 20, 1992. The change implemented by the licensee was evaluated in order to verify that the changes were performed consistent with plant procedures and the requirements of 10 CFR 50.59

b. Findings

(1) Changes to the FPP Without Prior Commission Approval

Introduction

The team identified a Severity Level IV NCV of FNP Unit 1 Operating License Condition 2.C.(4), in that, while implementing PCN No. B-90-0-7074, the licensee made changes to the approved FPP that decreased the effectiveness of the program without prior Commission approval. Similarly, this NCV applies to FNP Unit 2 Operating License Condition 2.C.(6), in that, while implementing PCN No. B-90-0-7074, the changes also adversely affected the ability to achieve and maintain SSD.

Description

During 1985 and 1986, the licensee submitted four requests for exemption from the technical requirements of 10 CFR 50, Appendix R, Section III.G.2.c to have one train of redundant SSD cables enclosed in a 1-hour rated fire barrier and an automatic fixed suppression system installed throughout the fire area. Exemption request 1-6 related to Fire Area 51, exemption request 1-39 related to Fire Area 1-004, exemption request 2-2 related to Fire Area 2-43 and exemption request 2-37 related to Fire Area 2-004. These exemption requests were granted by the NRC on the basis of its review of justification and special circumstances transmitted by Alabama Power Company. Additionally, an exemption was granted to forego having a smoke detection system installed throughout these fire areas. However, none of these exemption requests identified or described the effects of a fire in these areas on the MCR heating, ventilation and air conditioning (HVAC) system. At the time of these exemption requests, the licensee did not describe that each of these fire areas contained unprotected, redundant power supplies for both MCR A/C units. This condition was identified by the licensee around 1991 and resolved by the use of plant changes as described below.

PCN No. B-90-0-7074, approved January 20, 1992, was prepared to evaluate and document the effects of a fire anywhere in the plant on the MCR HVAC. The PCN identified the MCR A/C units, QSV49K001A-A and QSV49K001B-B, as the only electrical equipment of the MCR HVAC system that were necessary to maintain MCR temperature for SSD during a fire. The PCN reviewed the effects of a fire in each area for the impact on the MCR A/C units including the supporting systems.

The 10 CFR 50.59 Safety Evaluation prepared as part of the PCN package stated that the following areas were the only areas in the plant where a single fire could result in damage to both trains of the A/C units. This damage would be caused by a failure of redundant power supplies:

- Fire Area 51 (shared)
- Fire Area 1-004 (Unit 1)
- Fire Area 2-004 (Unit 2)
- Fire Area 2-043 (Unit 2)

The 10 CFR 50.59 Safety Evaluation (SE) concluded that in the event of a fire resulting in the loss of both trains of MCR A/C, SSD could be achieved using the ASD procedures from outside the MCR. The approved FNP FPP is documented in Appendix 9B of the UFSAR. Therefore, the licensee revised UFSAR Section 9B.5.2.1.2.2.D to indicate that, in addition to the MCR and the CSR, the use of ASD procedures could be required for the four areas listed above. Also, the PCN specified that plant procedures would be revised to include the use of ASD controls for the listed fire areas. Because these fire areas relied upon ASD methods to assure SSD, the requirements of 10 CFR 50, Appendix R, III.G.3 became applicable. Specifically, by designating these areas as III.G.3 fire areas, fire detection and a fixed suppression system was required in each fire area per Appendix R. However, the licensee did not request an exemption from this requirement for these areas. The earlier exemptions from protecting the cabling, from installing an automatic suppression system and from installing full fire detection capability in these fire areas do not carry over when changing from compliance with 10 CFR 50, Appendix R, III.G.2.c to compliance with 10 CFR 50, Appendix R, III.G.3. New exemption requests needed to be submitted for NRC review and approval based on the new plant conditions.

Six years later during the UFSAR Verification Program, the licensee found a discrepancy in UFSAR Section 9B.5.2.1.2.2.D. The licensee identified that Fire Area 1-042 (Unit 1) also contained unprotected power cables for both MCR A/C units. A 10 CFR 50.59 SE (for Activity No. FVP-030) was written, and approved February 20, 1998, to support changing the UFSAR to add Fire Area 1-042 to Section 9B.5.2.1.2.2.D as a III.G.3 area. [In this case, no request had been submitted to the NRC to exempt the requirement to have one train of redundant SSD cables enclosed in a 1-hour rated fire barrier, full fire detection and an automatic fixed suppression system installed throughout the fire area, as required by 10 CFR 50, Appendix R, III.G.2.c (and as was done originally for the other four fire areas).] After this 1998 change to the UFSAR, a total of five fire areas (in addition to the MCR and the CSR) were identified which may require the use of ASD procedures in order to safely shutdown the plant in the event of a fire.

The team independently verified that cables 1VAFF-D5P and 1VAJ1R04A associated with A/C unit QSV49K001A-A; and cables 1VBFG-D5P and 1VBJ1SO3A associated with A/C unit QSV49K001B-B were not protected and would suffer fire damage for a single exposure fire in Fire Area 1-004, Room 0409. The team also confirmed that Fire Area 1-004, Room 0409 did not have a fixed suppression system installed.

Based on the above facts, the team concluded that on January 20, 1992, and February 20, 1998, the licensee made changes to the approved FPP that decreased the effectiveness of the program (Unit 1) and adversely affected the ability to achieve and maintain SSD in the event of a fire (Unit 2). Specifically, the licensee inappropriately changed their fire protection program to designate the five fire areas as III.G.3 fire areas without either installing a full fire detection system and a fixed suppression system or obtaining an exemption from the NRC for the III.G.3 requirement for detection and fixed suppression systems. This is not allowed by the FPP and constituted a change from the approved program that required NRC approval prior to implementation as required by FNP Unit 1 Operating License Condition 2.C.(4) and FNP Unit 2 Operating License Condition 2.C.(6).

Analysis

Since the licensee failed to receive NRC approval for a change to the FPP that decreased the effectiveness of the program (Unit 1) or that could adversely affect the ability to achieve and maintain safe shutdown (Unit 2), this finding is not suitable for SDP analysis. Failure to properly evaluate changes to the FPP could adversely affect or degrade the reliability of SSD capabilities from the MCR. However, the team determined that this finding was of very low significance because the overall SSD capabilities in the affected fire areas and related FFP features were still adequate to ensure SSD capability. Therefore, this finding is characterized as Green.

Enforcement

10 CFR 50.48 requires nuclear power plants to have a fire protection program. It further requires that plants licensed to operate prior to January 1, 1979, comply with 10 CFR 50, Appendix R. Section III.G of Appendix R requires that a licensee have fire protection features so that one train of systems necessary to achieve and maintain hot shutdown is free of fire damage. This section also requires that redundant trains of SSD equipment located in the same fire area be: (1) separated by a 3-hour rated fire barrier, or (2) be separated by a 1-hour rated fire barrier with fire detection and automatic suppression, or (3) be separated by 20 feet with no intervening combustibles with fire detection and automatic suppression. In areas where these separation requirements are not met, the regulation allows use of ASD when fire detection and fixed suppression is provided.

The NRC Fire Protection SER for FNP Units 1 and 2 was completed and transmitted by letter to Mr. Allan R. Barton of Alabama Power company dated April 13, 1979. This letter amended the Unit 1 Facility Operating License NPF-2 by adding paragraph 2.C.(4), Fire Protection Program (Amendment No. 11). This license condition required that Alabama Power Company maintain in effect, and fully implement, all provisions of

the approved FPP as described in the initial issue and Amendments 1 through 4 of the FNP Fire Protection Program Re-evaluation (FPPR).

Effective February 19, 1981, the NRC amended its regulations to include Part 50.48 and Appendix R to 10 CFR 50 requiring that plants licensed to operate prior to January 1, 1979, comply with the requirements of Sections III.G, III.J, and III.O. This applied directly to Farley Unit 1. By letter dated December 8, 1980, Alabama Power Company committed to implement in Unit 2 any modifications required for Unit 1 to demonstrate compliance with Section III.G, III.J, and III.O of Appendix R. In Supplements 4 and 5 of the FNP SER, the NRC concluded that the Unit 2 FPP met all of the requirements of 10 CFR 50, Appendix R.

License Condition 2.C.(4) to the FNP Unit 1 Facility Operating License NPF-2 states, in part, "Alabama Power Company is authorized to make other changes to the program without prior Commission approval provided that such changes do not result is a decrease in the effectiveness of the program."

License Condition 2.C.(6) to the FNP Unit 2 Facility Operating License NPF-8 states, in part, "Southern Nuclear may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown."

Contrary to the above, the licensee inappropriately changed Fire Areas 51, 1-004, 1-042, 2-004 and 2-043 to 10 CFR 50, Appendix R, III.G.3 areas without installing a full fire detection system and a fixed suppression system in each fire area or obtaining an exemption applicable to III.G.3 areas prior to implementing this change. This violation was not evaluated under the SDP because it appeared to have impacted the NRC's ability to perform its regulatory function and, as such, was evaluated in accordance with guidance in Sections IV.A.1 through IV.A.4 and Section IV.B of the NRC's Enforcement Policy. The results of the violation were determined to be of very low safety significance. Therefore, this violation of License Condition 2.C.(4) for Unit 1 and License Condition 2.C.(6) for Unit 2 was classified as a Severity Level IV violation. The licensee entered this item in the corrective action program as Condition Report (CR) 2002002112. Because this non-willful violation was non-repetitive and was captured in the licensee's corrective action program, it is considered a Non-Cited Violation (NCV) 50-348, 364/02-06-01, Failure to Obtain NRC Approval Prior to Implementing Changes to the Approved Fire Protection Program.

(2) Failure to Modify Plant Procedures in a Timely Manner

Introduction

An NCV of 10 CFR 50, Appendix B, Criterion XVI was identified for the licensee's failure to promptly revise plant procedure AOP-29.0, Plant Fire, to incorporate the use of ASD procedures for Fire Areas 51, 1-004, 2-004, and 2-043, as specified in Production Change Notice (PCN) No. B-90-0-7074, dated January 20, 1992.

Description

Abnormal operating procedure FNP-0-AOP-29.0, Plant Fire, Revision 23, provides instructions in the event of a plant fire. Step 6.0 specifies actions that are to be taken if all MCR HVAC is lost and cannot be restored; and the temperature in the MCR exceeds 110 °F. The team determined that step 6.0 was added to the procedure in Revision 23 which was completed on August 9, 2002. This revision was prompted by the need to incorporate the use of ASD procedures for Fire Area 1-042. The requirement to revise AOP-29.0 to incorporate the use of ASD procedures for Fire Areas 51, 1-004, 2-004, and 2-043 was specified in PCN No. B-90-0-7074 dated January 20, 1992, but had not been implemented by the licensee for over ten years. This is a violation of 10 CFR 50 Appendix B, Criterion XVI because the licensee failed to assure that conditions adverse to quality were promptly corrected.

Analysis

The team determined that the finding was more than minor since it affected the Reactor Safety Cornerstone objective to ensure the availability, reliability, and capability of SSD systems relied upon to respond to a fire initiating event and to prevent undesirable consequences. Required operator actions may not have been accomplished in a timely manner because an approved plant procedure was not revised promptly for mitigating a fire in four fire areas. Using IMC 0609, Appendix F, the finding was determined to be very low significance because the finding did not directly affect detection, manual suppression capability, automatic suppression capability, fire barriers, or 20-foot separation defense in depth features. In addition, in all likelihood, upon the MCR becoming uninhabitable during a fire, it would have been evacuated and ASD procedures would have been used to mitigate the effects of the fire. Therefore, this finding is characterized as Green.

Enforcement

Criterion XVI of 10 CFR Part 50, Appendix B requires, in part, that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances be promptly identified and corrected.

Contrary to the above, from January 20, 1992 until August 8, 2002, the licensee's procedure for responding to a plant fire in four plant areas was not revised promptly following completion of a plant change. Because the licensee entered the finding into the corrective action program as CR 2002002610, this item is being treated as an NCV in accordance with Section VI.A.1 of the NRC's Enforcement Policy. This item is identified as NCV 50-348, 364/ 02-06-02, Failure to Revise Procedure AOP-29 Promptly.

.03 Post-Fire SSD Circuit Analysis

a. Inspection Scope

On a sample basis, the team reviewed the electrical schematics for power and control circuits of SSD components and looked for the potential effects of open circuits, shorts

to ground, and hot shorts. In addition, the same circuit cable routing information was evaluated for potential damage due to fire in the selected fire areas. This investigation focused on the cabling of selected components in systems important for safe shutdown. The team's review also included a sampling of components whose inadvertent operation due to fire may adversely affect post-fire SSD capability. The purpose of this review was to determine if a single exposure fire, in one of the fire areas selected for this inspection, could prevent the proper operation of both SSD trains.

A review of the fuse/breaker coordination analysis for the 4.16 kV emergency switchgear 1F and 1G; 600 V load centers 1D and 1E; 600 V MCCs 1A, 1U and 1V, 1A and 1B 125 VDC distribution buses and 1J vital 120 VAC bus was conducted. The purpose of this review was to verify that selective coordination exists between branch circuit protective devices (fuses, breakers, relays, etc.) and the bus feeder breaker/fuse to ensure that in the event of a fire-induced short circuit, the fault is isolated before the feeder device trips. The concern is that if a short to ground fault on an uncoordinated circuit occurs, then the associated feeder breaker/fuse may actuate resulting in the loss of power to essential SSD equipment.

b. Findings

No findings of significance were identified.

.04 ASD Capability

a. Inspection Scope

The team reviewed the licensee's ASD methodology to determine the adequacy of the identified components and systems to achieve and maintain SSD conditions for each fire area selected for review and to verify conformance with applicable requirements as listed in Section .01 above. For a significant fire in Fire Area 1-040, ASD from the HSD panels would be used to place the unit in hot shutdown. The team specifically reviewed the adequacy of the systems and components [at the HSD panels] selected for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring, and support system functions.

The team also evaluated the licensee's response to Information Notice (IN) 92-18, Potential Loss of Remote Shutdown Capability During a Control Room Fire, to determine if components necessary for safe shutdown had been analyzed for possible spurious actuation which could adversely affect the plant's ability to safely shut down from the HSD panels. The inspection included review of IN 92-18 applicability reviews, 10 CFR 50.59 safety review, and various procedures to verify an adequate determination process was used and implemented in the analysis. Electrical diagrams of power, control, and instrumentation cables required to support ASD were analyzed for fire induced faults that could defeat operation from the HSD panels. The team reviewed the electrical isolation and protective fusing in the transfer circuits of components (e.g., motor operated valves) required for post-fire SSD at the HSD panels to verify that the SSD components were physically and electrically separated from the fire area. The team also examined the electrical circuits for a sampling of components operable at the

HSD panels to ensure that a fire in the HSD panel rooms would not adversely affect SSD capability from the MCR.

b. Findings

No findings of significance were identified.

.05 Operational Implementation of ASD Capability

a. Inspection Scope

The team reviewed the operational implementation of the ASD capability for a fire in Fire Area 1-040 to determine if: (1) the procedures used for ASD were consistent with the SSA methodology and assumptions; (2) the procedures were written so that the operator actions could be correctly performed within the times assumed in the SSA; (3) the training program for operators included ASD capability; (4) personnel required to achieve and maintain the plant in hot standby from HSD panels could be provided from normal onsite staff, exclusive of the fire brigade; and (5) the licensee periodically performed operability testing of the HSD panel instrumentation and of the transfer and control functions. The team walked down Abnormal Operating Procedure (AOP) FNP-0-AOP-29.0, "Plant Fire," and FNP-1-AOP-28.1, "Fire in the Cable Spread Room," to evaluate whether the procedures could be performed within the required times, given the minimum required operator staffing level, with or without offsite power. Operator and fire brigade staffing was reviewed to establish compliance with TS and conformance with the FPP. The team reviewed operator training lesson plans and job performance measures (JPMs), and discussed the training with operators to ascertain if ASD activities were appropriately included in the training program. In addition, the team reviewed the operator training text for the HSD panels for comparison to the as-built configuration of the system.

b. Findings

No findings of significance were identified.

.06 Communications for Performance of ASD Capability

a. Inspection Scope

The team reviewed the adequacy of the communication system to support plant personnel in the performance of ASD functions and fire brigade duties. The licensee credited an operable and reliable radio repeater system for prompt fire brigade response and post-fire SSD control room operator response. The inspectors reviewed the adequacy of the radio communication system utilized by the fire brigade and examined the licensee's portable radio channel features should the radio repeaters be unavailable. The team walked down sections of AOP-28.0, "Control Room Inaccessibility," and AOP-28.1. The team inspected selected ASD equipment requiring local manual operator actions in remote areas of the plant. The team assessed the ability of operators at the HSD panels to communicate with personnel in these remote areas. The team also reviewed records from periodic tests of the radio repeater system and

from periodic inventory of operator post-fire SSD equipment lockers to assess whether the surveillance test program for the radios was sufficient to assure proper operation during a fire.

b. Findings

No findings of significance were identified.

.07 Emergency Lighting for Performance of ASD Capability

a. Inspection Scope

The team reviewed the design and operation of, and examined the manufacturer's data sheets for the direct current (DC) emergency lighting system self-contained, battery powered units. The team checked if these battery power supplies were rated with at least an 8-hour capacity as required by Section III.J of Appendix R. During plant walk downs of selected areas where operators performed local manual actions, the team inspected area emergency lighting units (ELUs) for operability and checked the aiming of lamp heads to determine if adequate illumination was available to correctly and safely perform the actions required by the procedures. The team inspected emergency lighting features along access and egress pathways used during SSD and ASD activities for adequacy and personnel safety. The team also reviewed periodic test and maintenance procedures and records to determine if adequate surveillance testing was in place to assure proper operation of the ELUs in the event of a fire at the site.

b. Findings

No findings of significance were identified.

.08 Cold Shutdown Repairs

a. Inspection Scope

The team reviewed existing procedures and examined plant equipment to establish that the licensee had dedicated repair procedures, equipment, and materials to accomplish repairs of damaged components required for cold shutdown, that these components could be made operable, and that cold shutdown could be achieved within 72 hours. The team examined cold shutdown repair equipment and reviewed locker inventories of replacement electrical power and control cables for pumps and valves needed to take the plant to cold shutdown following a large fire. The team checked if the equipment was appropriately labeled, maintained in good condition and in sufficient quantity to successfully accomplished all required repairs. The team evaluated the estimated manpower and the time required to perform post-fire repairs for reasonableness.

b. Findings

No findings of significance were identified.

.09 Fire Barriers and Fire Area/Zone/Room Penetration Seals

The team walked down the selected fire areas to evaluate the fire resistance of barrier enclosure walls, ceilings, and floors. This evaluation also included fire doors, and fire dampers to ensure at least one train of SSD equipment would be maintained free of fire damage. The team observed the material condition and configuration of the installed fire barrier features. In addition, the team reviewed construction details and supporting fire test reports for 3-hour rated fire barriers installed in the plant. Visual inspections of selected barriers were performed to confirm that the barrier installations were consistent with the tested configuration. The also team walked down and performed a qualification test documentation review of four penetration seals installed in the walls and floors of the selected fire areas. The team compared the observed fire barrier penetration seal configurations to the design drawings and tested configurations. The team also compared the penetration seal ratings with the ratings of the barriers in which they were installed.

The team reviewed ASD procedures, selected fire fighting pre-plan procedures, and HVAC systems to verify that access to remote SSD equipment and local operator manual actions would not be inhibited by smoke migration from one area to adjacent plant areas used to accomplish SSD. In addition, the team reviewed licensing documentation, engineering evaluations of fire barrier features, and NFPA code deviations to verify that the fire barrier installations met design requirements and license commitments.

The team performed an independent technical review of the licensee's engineering and maintenance documentation, transformer vendor information, insulating fluid manufacturer information, Factory Mutual listing agency documentation, Institute of Electrical and Electronics Engineers (IEEE) Standards, and 10 CFR 50.59 safety evaluation documentation completed in support of a plant modification to replace an Askarel-type dielectric insulating fluid with a silicone-type dielectric insulating fluid.

b. Findings

Introduction

The team identified a Green NCV for failure to establish fluid confinement protection features as specified by the listing agency (Factory Mutual Data Sheet 5-4/14-8) for two safety-related, 600V transformers 1A and 1D in Unit 1, Train A LC Room 335 (Fire Area 1-041.)

Description

FNP has 57 indoor power transformers in the power block, of which 25 are safety related. These transformers were originally cooled and insulated by an Askarel-type, synthetic fluid called Inerteen (R) containing polychlorinated biphenyls (PCBs). However, due to environmental concerns with using PCBs, the use of PCB-based Askarels was discontinued in transformers and the power industry began programs to eliminate the PCBs from their transformers. During the late 1980s and mid-1990s, FNP implemented its own Askarel abatement program. Over the course of 4 to 5 years, the licensee

performed a retro-fill fluid replacement of the Inerteen insulating fluid with Dow Corning 561 (DC 561) silicone-type insulating fluid. The team reviewed the Westinghouse Electric Corporation transformer insulating fluid manufacturer's information for Inerteen; the DC 561 insulating fluid manufacturer's Technical Manual; the Monsanto Material Safety Data Sheet; the FNP Safety Evaluation ES 87-797; the FNP work order No. S00061595; the Factory Mutual Loss Prevention Data Sheet 5-4/14-8; the Factory Mutual Research Approval Guide-Transformer Fluids and the FNP UFSAR, Section 9B.4.1.3.3.

The Westinghouse information manual, Instructions of Handling Inerteen (R) Insulating Fluid, Part 1, described Inerteen as "a synthetic insulating fluid made by the chlorination of biphenyl. The chlorination was necessary to impart nonflammable properties to the Inerteen." Factory Mutual, Loss Prevention Data Sheet Data Sheet 5-4/14-8, Part A, stated that, "Askarels will burn only if subjected to extreme temperatures for long periods of time. Therefore, this type is treated as nonflammable." A technical analysis provided by the licensee, supported by the Monsanto Material Safety Data Sheet, stated that the Askarel-type fluid had a flash point of 195° C and a fire point of "None (to boiling)." The Factory Mutual Research Approval Guide-Transformer Fluids, stated that nonflammable transformer fluids do not exhibit any fire point up to their boiling point when tested per ASTM D-92. Therefore, the team concluded that the originally installed Askarel-type transformer insulating fluid was considered a nonflammable and non-explosive fluid having no practicable fire point to support continuous combustion of the fluid.

The replacement transformer fluid, DC 561, was a dimethyl silicone insulating fluid. The DC 561 technical manual described the DC 561 fluid as a silicone liquid that will burn, but was less flammable than paraffin-type oils. The technical manual also stated that the DC 561 fluid had a flash point of 324 °C, a total heat release rate (HHR) of 140 kw/m^2 (per ASTM E 1354-9), and a fire point of 357 °C. Based on the above, the team concluded that FNP had replaced the Askarel-type transformer insulating fluid with a more combustible silicone-type insulating fluid. The team determined that this replacement insulating fluid represented an increased likelihood of a sustained fire from a catastrophic failure of an effected transformer.

The licensee wrote several evaluations in support of UFSAR Section 9B.4.1.3.3 changes to evaluate and document the effects of the fluid retro-fill/replacement for 57 separate transformers at FNP. These documents included 10 CFR 50.59 SE, ES 87-797 (approved November 11, 1988), Activity No. AD1F87-171 (approved May 23, 1988), and Activity No. FVP-103 (approved December 1, 1997). The 10 CFR 50.59 safety evaluations stated that the permanent replacement fluid would result in a reduction in the fire area heat loadings and accepted the transformer fluid, classified as "less flammable", with a reference to the listing agency, Factory Mutual Data Sheet 5-4/14-8.

On Unit 1, Train A LC Room 335 (Fire Area 1-041) contained two 600V load centers (LCs) (1-D and 1-A) with associated (1000 KVA rated) station service transformers (SST). These high-voltage, high-amperage transformers were insulated with a silicone-type dielectric fluid. Each transformer contained an estimated 295 gallons of insulating fluid. The team found the following design features and plant conditions during inspection of this area.

- The transformers were operating above the ambient temperature of the LC room (observed transformer gauge readings were 50-70 °C (120-158 °F.)
- Ionization detectors were installed in the area to provide early warning of fire.
- Heat detectors were installed in the cabinets of the LCs and switchgear which actuate in-cabinet CO_2 gaseous fire systems.
- No automatic suppression system for the general floor area in Fire Area 1-041 was installed to provide protection from an external oil spill fire hazard.
- No floor drains were installed in the fire area that would allow spread of an oil spill fire to a different fire area through drain piping.
- No noncombustible curbing or trenches were installed around the transformers to contain the entire contents of each transformer or confine the contents within Fire Area 1-041.
- The floor surface of Room 335 was essentially smooth and level.
- The room had fire rated doors namely, Door No. 321 opening to hallway 339 (Fire Area 1-042), Door No. 319 opening to Train A vertical cable chase Room 116 (Fire Area 1-008), and Door No. 324 opening to Train B vertical cable chase Room 117 (Fire Area 1-009).
- Door No. 324 was located about 6-feet from 600V transformer 1A while Door No. 321 was located about 15-feet from 600V transformer 1D. Door No. 319 was located about 10-feet from 600V transformer 1A but the bottom of the door was about 6-inches above the floor.

During in-plant walk downs, the team observed a floor level opening at Door No. 324 to the Train B vertical cable chase Room 117 and a gap (light was seen from under the door sweep and sill). The team determined that this gap combined with the lack of a fluid confinement barrier around the transformers, as well as their close proximity to Door No. 324, could provide a pathway for a transformer insulating fluid spill fire to spread unabated from the Unit 1, Train A LC Room 335 into the Train B vertical cable chase Room 117, thus exposing redundant SSD system cables to possible fire damage. The team observed that Door No. 321, though susceptible to spread of a transformer insulating fluid spill fire and therefore captured by this finding, did not have a significant gap between the floor and the bottom of the door. Thus the risk of fire spread under this door to hallway 339 (Fire Area 1-042) was considered to be significantly less than that associated with Door No. 324. The remaining door in this room, Door No. 319, was located such that the bottom of the door was above the minimum 4-inch height specified in the data sheet and thus is not at issue in this finding. Consequently, the team's evaluation of the risk significance of this finding was primarily focused on Door No. 324 based on the safety significance of potential oil transport to the Train B vertical cable chase Room 117.

In their Fire Hazard Analysis for Fire Area 1-041 associated with the Askarel abatement program, the licensee considered the adequacy of fire area boundary features associated with the combustible loading of the replacement DC 561 fluid as compared to the Inerteen fluid. However, the licensee had not included a comparative review of the use requirements specified by the fluid vendor nor the Factory Mutual approving agency requirements and listing restrictions. The team performed an independent review and evaluation of the Factory Mutual Data Sheet 5-4/14-8, Table 1, Recommended Physical Protection for Indoor Transformers Filled with Less Flammable Fluids, for the two transformers located in Unit 1, Train A LC Room 335. The team

analyzed Table 1 (without automatic sprinklers or water spray systems, and without a liquid confinement area), and determined that alternative 2B.4 was the applicable transformer physical protection alternative. This alternative specified that a 1-hour rated transformer vault was the recommended physical protection for these transformers. Given the construction, design features and layout of Unit 1, Train A LC Room 335 and its 600V transformers, the acceptable boundaries of the needed vault coincide with the walls, floor, ceiling and doors of Fire Area 1-041. The team's review of Factory Mutual Data Sheet 5-4/14-8, Section 6.2.4, Less Flammable Fluid Filled Transformers, also identified that all floor level door openings bounding the vault (the fire area barrier boundary) needed to be provided with curbs or ramps arranged to prevent the spread of fluid outside the vault.

Catastrophic failure of a 600V transformer and subsequent spill of the DC 561 insulating fluid onto the floor could result in a wide-area fluid fire unless spill confinement protection features are incorporated. The team concluded that after replacing the Inerteen insulating fluid with DC 561 insulating fluid in two separate 600V transformers in Unit 1, Train A LC Room 335, the licensee failed to install adequate physical fluid confinement protection features (curbs or ramps) at Doors No. 324 and 321 as specified in Factory Mutual Data Sheet 5-4/14-8. As a result, important redundant SSD components, cables and systems within the Train B vertical cable chase Room 117 (Fire Area 1-009) were not adequately protected from a transformer initiated fluid fire in Unit 1, Train A LC Room 335.

Analysis

This finding was determined to be more than minor for Door No. 324 because it could be viewed as a precursor to a significant event where a combustible liquid fire in one fire area could potentially cause damage to the redundant trains of safe shutdown cables in an adjacent fire area. The inspectors evaluated the finding using IMC 0609, Appendix F. The finding affected the fire barrier capability, one of the defense-in-depth elements. Consequently, the finding met the criteria of Step 1 of Phase 1 to proceed to Step 2 to make a safety importance determination (IMC 0609, Appendix F, Figure 4-1). However, the licensee's technical analysis, performed following the inspection, of data from fire testing by Dow Corning, and documented in Dow's "561 Transformer Fluid Technical Manual," concluded that DC 561 insulating fluid was very difficult to ignite and that an external ignition source was necessary for continued burning. During the course of burning a pool of this fluid during testing, a crust of ash and silica progressively formed over the surface. Over time, this process inhibited heat release and resulted in self-extinguishment of the fluid. Hence, the finding was determined to have very low safety significance because a fire in the Unit 1, Train A LC Room 335 (Fire Area 1-041) involving the silicone-type transformer insulating fluid only had the potential to affect a single division of SSD equipment (Train A) based on the likelihood of self-extinguishment prior to spreading under the door opening into the adjacent fire area. Therefore, because the finding did not adversely affect the rating of the 3-hour rated fire barrier between Fire Areas 1-041 and 1-009 which separates the two redundant trains of SSD functions (IMC 0609, Appendix F, Figure 4-5), this finding was characterized as Green.

Enforcement

10 CFR 50.48.a, “Fire Protection,” and Appendix R to 10 CFR 50, “Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," requires a fire protection plan and establishes specific fire area barrier features required to satisfy General Design Criterion 3, “Fire Protection.”

License Condition 2.C.(4) to Farley Unit 1 Operating License NPF-2 states, in part, that Alabama Power Company shall maintain in effect and fully implement all provisions of the approved fire protection plan. The approved FPP is maintained and documented in the FNP UFSAR, Attachment 9B.

Revision 15 to the Farley UFSAR Section 9B.4.1.3.3, states, in part, that all high-voltage, high-amperage transformers located within buildings are insulated with a synthetic (silicone-type) insulating and cooling liquid which is classified as “less flammable.” In accordance with the referenced listing agency (Factory Mutual, Loss Prevention Data Sheet 5-4/14-8), a less flammable fluid may be used in replacement of Askarel-type fluid if installed as outlined within the data sheet. Factory Mutual Data Sheet 5-4/14-8, Section 6.2.4, states, in part, that all floor level door openings bounding the vault (in this case, the vault is defined by the area’s fire barrier boundary) should be provided with curbs or ramps arranged to prevent the spread of fluid outside the vault.

Contrary to the above, the floor-level openings of Doors No. 324 and 321 had no curbs or ramps provided to prevent the spread of fluid outside LC Room 335 into adjacent fire areas. This condition was contrary to the requirements of the Farley FPP as outlined in UFSAR, Section 9B.4.1.3.3, and therefore did not meet the requirements as set forth in 10 CFR 50.48 and Farley Operating License Condition 2.C.(4). Because the licensee entered the finding into the corrective action program as CR 2002002113, this violation is being treated as an NCV in accordance with Section VI.A.1 of the NRC’s Enforcement Policy. This item is identified as NCV 50-348/02-06-03, Failure to Maintain and Implement Fire Protection Program Transformer Fluid Confinement Features Required by the Listing Agency.

.10 Fire Protection Systems, Features, and Equipment

a. Inspection Scope

The team reviewed flow diagrams, electrical schematic diagrams, periodic test procedures, engineering technical evaluations for NFPA code deviations, operational valve lineup procedures, and cable routing data for the power and control circuits of the motor-driven fire pump and the four fire protection water supply system yard mains. The review evaluated whether the common fire protection water delivery and supply components could be damaged or inhibited by fire-induced failures of electrical power supplies or control circuits and subsequent possible loss of fire water supply to the plant. Additionally, team members walked down the fire protection water supply system in selected fire areas to assess the adequacy of the system material condition, consistency of the as-built configuration with engineering drawings, and operability of the system in accordance with applicable administrative procedures and NFPA standards.

The team examined the adequacy of installed fire protection features in accordance with the fire area and system spatial separation and design requirements in 10 CFR 50, Appendix R, III.G. The team walked down accessible portions of the fire detection and alarm systems in the four selected fire areas to evaluate the engineering design and operation of the installed configurations. The team also reviewed engineering drawings for fire detector spacing and locations in the four selected fire areas for consistency with the licensee's fire protection plan and the requirements in NFPA 72E.

The team walked down selected fire areas with sprinkler/water spray suppression systems installed to assure proper placement and spacing of the heads/nozzles and the lack of obstructions. The team examined vendor information and design calculations to verify that the required suppression system density for each protected area was available. Additionally, the team reviewed the adequacy of the design and installation of the carbon dioxide (CO_2) fire suppression systems for load center cabinets, termination cabinets, and transfer switch cabinets. This review included CO_2 fire suppression system controls to assure accessibility and functionality of the systems, as well as associated CO_2 storage tank capacity. The team also examined licensee design calculations, vendor certifications, and pre-operational field test data to verify the required quantity of CO_2 for the cabinets was available.

The team reviewed the adequacy of the design, installation and operation of the manual suppression standpipe and fire hose system for the selected fire areas. The team examined design calculations and evaluations to verify that the required fire hose water flow and sprinkler system density for each protected area were available. The team checked a sample of manual fire hose lengths to determine whether they would reach the SSD equipment. Additionally, the team observed placement of the fire hoses and extinguishers to assess consistency with the fire zone data sheets.

b. Findings

No findings of significance were identified.

.10 Compensatory Measures

a. Inspection Scope

The team reviewed the licensee's Fire Protection Status Report which identifies each unit's and shared degraded structures, systems, and components. The team also reviewed the Fire Impairment Assessment Action Status log and associated compensatory measures. The review was performed to verify that the risk associated with removing fire protection and/or post-fire systems or components was properly assessed and adequate compensatory measures were implemented in accordance with the approved fire protection program. The team also reviewed condition reports (CRs) generated over the last 18 months as a result of any fire protection features that were not returned to service within the time frames required.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA6 Meetings

Exit Meeting Summary

The team presented the interim inspection results to Mr. D. Grissette and other members of your staff at the conclusion of the inspection on September 13, 2002. A final exit meeting was held via telephone with Mr. D. Grissette and other members of the licensee's staff on October 25, 2002, to present the final results of the inspection. The licensee acknowledged the findings presented. Proprietary information is not included in the inspection report.

SUPPLEMENTAL INFORMATION

Partial List of Persons Contacted

Licensee

M. Ajluni, Licensing Manager
C. Buck, Chemistry/Health Physics Manager
D. Davidson, Fire Marshal
D. Grissette, General Manager
J. Johnson, Assistant General Manager - Operations
R. Martin, Engineering Support Manager
B. Moore, Maintenance Manager

NRC
S. Cahill, Chief, Branch 2, Division of Reactor Projects, Region II
T. Johnson, Senior Resident Inspector, Farley

Items Opened, Closed, and Discussed

Opened

None

Opened and Closed

50-348,364/02-06-01	NCV	Failure to Obtain NRC Approval Prior to Implementing Changes to the Approved Fire Protection Program (Section 1R05.02)
50-348,364/02-06-02	NCV	Failure to Revise Procedure AOP-29.0 Promptly (Section 1R05.02)
50-348/02-06-03	NCV	Failure to Maintain and Implement Fire Protection Program Transformer Fluid Confinement Features Required by the Listing Agency (Section 1R05.08)

Closed

None

Discussed

None

Attachment

List of Inspection Documents Reviewed

PROCEDURES

FNP-0-AP-35, General Plant Housekeeping and Cleanliness Control, Rev. 26
FNP-0-AP-37, Fire Brigade Organization, Rev. 15
FNP-0-AP-38, Use of Open Flame, Revision 13.0
FNP-0-AP-39, Fire Patrols and Watches, Revision 14.0
FNP-0-ACP-35.1, Plant Housekeeping Inspection Guidance, Rev. 2
FNP-0-ACP-35.2, Flammable, Combustible, and Chemical Product Storage, Rev. 3
FNP-0-AOP-28.1, Fire or Inadvertent Fire Protection System Actuation in the Cable Spreading Room, Rev. 20
FNP-0-AOP-29.0, Plant Fire, Rev. 24
FNP-0-EMP-1383.01, Freeze Protection Inspections, Rev. 6
FNP-0-EMP-1501.05, MOV Preventative Maintenance Flowpath, Rev. 14
FNP-0-EMP-1903.01, Inspection of Station Service Transformers, Rev. 6
FNP-0-EMP-1906.01, Installation and Removal of Temporary Jumpers
FNP-0-EMP-2007.01, Infrared Survey Program, Rev. 5
FNP-0-FSP-5, Documentation of Fire Drill Critiques, Rev. 1
FNP-0-FSP-43, Visual Inspection of Kaowool Wraps, Rev. 7
FNP-0-FSP-61, CO_2 System Valve Position Check, Rev. 3
FNP-0-FSP-205.0, Inside Fire System Valve Operability Test, Rev. 6
FNP-0-FSP-311, Two (2) Hour Illumination Test Appendix “R” Emergency Lighting, Rev. 1
FNP-0-FSP-400, Diesel-Driven Fire Pump Inspection, Rev. 5
FNP-0-SOP-0.0, General Instructions to Operations Personnel, Rev. 71
FNP-0-SOP-0.4, Fire Protection Program Administration Procedure, Rev. 42
FNP-1-AOP-9.0, Loss of Component Cooling Water, Rev. 15
FNP-1-AOP-28.0, Control Room Inaccessibility, Rev. 10
FNP-1-AOP-28.1, Fire in Cable Spreading Room, Rev. 20
FNP-1-AOP-28.2, Fire in the Control Room, Rev. 16
FNP-1-FSP-308, Quarterly Maintenance of Emergency Lighting Unit 1 Appendix “R”, Rev. 12
FNP-1-FSP-310, Annual Maintenance of Emergency Lighting Unit 1 Appendix “R”, Rev. 6
FNP-1-FSP-311, Semi-Annual Maintenance of Emergency Lighting Unit 1 Appendix “R”, Rev. 3
FNP-1-STP-45.1, Surveillance Test Procedure - CVCS Cold Shutdown Valves Inservice Test, Rev. 28
FNP-1-STP-73.1, Surveillance Test Procedure - Hot Shutdown Panel Operability Verification, Rev. 6
Appendix C - 1C CCW Pump Operation from the Hot Shutdown Panel
Appendix D - Verification of 1B CCW Pump, A Train, Operation from the Hot Shutdown Panel
Appendix E - Verification of 1A CCW Pump Operation from the Hot Shutdown Panel
Appendix F - Verification of 1B CCW Pump B Train Operation from the Hot Shutdown Panel
Appendix G - Verification of A Train Charging Pump Operation from the Hot Shutdown Panel
Appendix H - Verification of B Train Charging Pump Operation from the Hot Shutdown Panel
Appendix I - Verification of Charging Flow Control Valve Operation from the Hot Shutdown Panel
Appendix K - Verification of MDAFWP Operation from the Hot Shutdown Panel
Appendix L - Verification of Seal Injection Flow Control Valve Operation from the Hot Shutdown Panel

Appendix M - Verification of TDAFWP Steam Admission Valve Operation from the Hot Shutdown Panel
FNP-1-STP-73.4, Surveillance Test Procedure - Verification of CCW to Miscellaneous Header MOV-3047 Operation from the Hot Shutdown Panel, Rev. 1
FNP-1-STP-73.6, Surveillance Test Procedure - Verification of Reactor Head Vent Valve Operation from the Hot Shutdown Panel, Rev. 0
FNP-1-STP-73.7, Surveillance Test Procedure - Verification of Pressurizer PORV and PORV Iso. Valve Operation from the Hot Shutdown Panel, Rev. 0

DESIGN CRITERIA AND CALCULATIONS

Calculation No. E-082, Plant Electrical Distribution System Coordination Study, Rev. 7, dated 1/6/00

CALCULATIONS AND EVALUATIONS

FNP-0-ETP-3401, Transient Fire Load Analysis, Number 1-2002-218, dated 6/24/02
FP-99-0729, Evaluation of Fire Hose Station Reducing Devices for REA 99-2092
SM-89-1601-001-PM, Determine Time to Fill Fire Protection Water Tanks Using Service Water, dated 7/2/90
TE-SM-99-2092-001, Impact of Removing Pressure Restricting Valves and Fire Protection System Hydraulic Analysis, dated 11/2/00

JOB PERFORMANCE MEASURES (JPMs) AND LESSON PLANS

CRO-365C, Perform The Required Actions To Take Local Control Of Components At The Hot Shutdown Panel, Approved 10/08/01
CRO-365D, Align The Charging Pump Suctions To RWST From The Hot Shutdown Panel In Response To A Fire In The Cable Spreading Room, Approved 9/06/01
SO-029, Manually Control Charging Flow Locally Using The Charging Flow Control Bypass Valve, Approved 3/26/01
SO-031, Operate The Motor-Operated Emergency Borate Valve, Approved 8/14/01
SO-449, Supply Emergency Air To Steam Generator Atmospheric Relief Valves From Emergency Air Compressors, Approved 8/25/01
SO-484, Align Service Water Emergency Supply To Fire Protection System, Approved 8/26/01
SO-549A, Manual Operation Of SG Atmospheric Relief, Approved 2/13/02
SO-601, Perform The Required Actions To Locally Trip The SGFPs and Condensate Pumps, Approved 8/29/01
SO-610F, Reset The Hot Shutdown Panel Aux Relay Transfer Switches, Approved 11/26/01

SIMULATOR TRAINING SCENARIOS

OPS-564, Scenario 2000E - Main Generator Problems With Loss of Off-Site Power And Subsequent Fire In 4160V 1F Switchgear, Dated 1/5/00
OPS-52520, Scenario 3-2A - Start 1B DG, Respond To 1D SW Pump Trip, Respond To Letdown PK-145 Controller Failure, Evacuate Control Room Due To Fire, (undated)

COMPLETED MAINTENANCE AND SURVEILLANCE TEST PROCEDURES/RECORDS

FNP-0-EIP-16.0, Checklists A, X, & Y, dated 6/12/02
FNP-0-EIP-16.0, Checklists JJ & KK, dated 4/11/02
FNP-0-EMP-1701.01, Electrical Equipment Condition Testing, Rev. 3, dated 12/1/95
FNP-0-EMP-3570.02, PCB Transformer Retrofill, Rev. 7, dated 11/30/95

DRAWINGS

A-177076 (Sheet 4036), Block Diagram - Seal Inj. Filt. Inlet Loop 186, Rev. 1
A-177076 (Sheet 4038), Block Diagram - Regenerative HX Charging Flow, Rev. 4
A-508650, Fire Zone Data Sheet Aux Bldg 100'0" (NW Quad)-Fire Area 06, sh. 12, Rev. 0
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2002001846, Loss of Main Steam Valve Room Lighting and Only Five Battery Backup Lights During a LOSP
2002001850**,** Evaluate Electrically Safe Fire Hose Nozzles in the Plant
2002001852**,** Evaluate Risk Likelihood of Damage to Unprotected Drain Valves on the Fire Protection Water Storage Tanks Due to High Winds
2002001859, Evaluate AP-38 to Include All Hazardous Areas in the IPEEE
2002001860, Evaluate Ignition Controls and Transient Combustible Control Administrative Programs are Risk Informed and Identify Changes as Required
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