UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

March 21, 2007

Florida Power and Light Company
ATTN: Mr. J. A. Stall, Senior Vice President
Nuclear and Chief Nuclear Officer
P. O. Box 14000
Juno Beach, FL 33408-0420

SUBJECT: TURKEY POINT NUCLEAR PLANT- NRC TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000250/2007006 AND 05000251/2007006 AND EXERCISE OF ENFORCEMENT DISCRETION

Dear Mr. Stall:

On February 9, 2007, the U.S. Nuclear Regulatory Commission (NRC) completed a triennial fire protection inspection at your Turkey Point Nuclear Plant, Units 3 and 4. The enclosed report documents the inspection findings which were discussed at an exit meeting on that date, with Mr. T. Jones and others of your staff.

The inspection examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

The enclosed report documents one noncompliance that was identified during the inspection for which the NRC is exercising enforcement discretion. The NRC is not taking any enforcement action for this noncompliance because it meets the criteria of the NRC Enforcement Policy, "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)."

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS).

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Should you have any questions concerning this letter, please contact us.

Sincerely,

/RA G. MacDonald for/

D. Charles Payne, Chief
Engineering Branch 2
Division of Reactor Safety

Docket Nos. 50-250, 50-251
License Nos. DPR-31, DPR-41

Enclosure: Inspection Report 05000250/2007006 and 05000251/2007006
w/Attachment; Supplemental Information

cc w/encl:
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Site Vice President
Turkey Point Nuclear Plant
Florida Power and Light Company
Electronic Mail Distribution

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Licensing Manager
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REGION II

Docket Nos:	50-250, 50-251
License Nos:	DPR-31, DPR-41
Report No:	05000250/2007006, 05000251/2007006
Licensee:	Florida Power & Light Company (FP&L)
Facility:	Turkey Point Nuclear Plant, Units 3 & 4
Location:	9760 S. W. 344th Street Florida City, FL 33035
Dates:	January 22 - 26, 2007, Week 1 February 5 - 9, 2007, Week 2
Inspectors:	P. Fillion, Senior Reactor Inspector (Lead Inspector) M. Thomas, Senior Reactor Inspector J. Quinones, Reactor Inspector B. Melly, Consultant, Fire Protection Engineer
Accompanying:	L. Bradford, Nuclear Safety Professional Development Program (February 5 - 9, 2007)
Approved by:	D. Charles Payne, Chief Engineering Branch 2 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000250/2007-006, 05000251/2007-006; 01/22/2007 - 02/09/2007; Turkey Point Nuclear Power Plant, Units 3 and 4; Fire Protection

This report covers an announced two-week triennial fire protection inspection by three regional reactor inspectors from the U. S. Nuclear Regulatory Commission's (NRC's) Region II office located in Atlanta, Georgia, and a consultant fire protection specialist. 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.

A. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violations

None.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R05 Fire Protection

This report presents the results of a triennial fire protection inspection for a plant in transition to National Fire Protection Association (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," 2001 Edition. This inspection was conducted in accordance with NRC Inspection Procedure (IP) 71111.05TTP, "Fire Protection-NFPA 805 Transition Period (Triennial)." The objective of the inspection was to review the Turkey Point Nuclear Power Plant fire protection program (FPP). The team selected three fire areas for detailed review to examine the licensee's implementation of the FPP. The selection of fire areas was based on available risk information as analyzed onsite by a Region II Senior Reactor Analyst, data obtained in plant walkdowns regarding potential ignition sources, location and characteristics of combustibles, and location of equipment needed to achieve and maintain safe shutdown of the reactor. The relative complexity of the shutdown procedure for the various fire areas was also a consideration. Section 71111.05-05 of the IP specifies a minimum sample size of three fire areas. Detailed inspection of these three fire areas fulfills the procedure completion criteria. To date, most triennial fire protection inspections have focused on at least one alternative shutdown area as defined by Title 10 of the Code of Federal Regulations, Part 50 (10 CFR 50), Appendix R, Section III.G.3, however this inspection deviated from that practice. There were four III.G.3 areas at Turkey Point, and three had been inspected in previous inspections. The fourth was judged to be of lower safety significance than several normal shutdown areas. The three areas selected offered a good diversity of plant areas, with regard to systems potentially affected and type of suppression system. The three areas chosen were:

- Fire Area F, Fire Zone (FZ) 58 - Ground elevation of auxiliary building, III.G.2.a compliance area, fire may involve both units, no fixed suppression installed, shutdown via Train B.

- Fire Area OO, FZ 108B - Unit 3, Train B, electrical equipment room in control complex, III.G.2.c compliance area, contains inverters and DC distribution panels, Halon system initiated by cross-zone ionization detectors installed, shutdown via Train A.

- Fire Area V, FZ 68 - Unit 4, Train A, 4.16 kV switchgear room, III.G.2.a compliance area, no fixed suppression installed, shutdown via Train B.

For each of the selected fire areas, the inspectors evaluated the licensee's FPP against applicable requirements, including Operating License Condition 3.D; 10 CFR 50,

Appendix R; 10 CFR 50.48; commitments to Appendix A of Branch Technical Position Auxiliary and Power Conversion Systems Branch 9.5-1; Turkey Point Nuclear Plant Updated Final Safety Analysis Report (UFSAR); related NRC Safety Evaluation Reports; and plant Technical Specifications. In addition, inspection effort was expended in evaluating the gaseous fire suppression system in Fire Area NN, FZ 108A, the Unit 4 Train A electrical equipment room, due to concerns with that system which came to light during the inspection. The inspectors evaluated all areas of this inspection, as documented below, against these requirements. The specific documents reviewed by the team are listed in the Attachment.

.1 Safe Shutdown Analysis (SSA) and Operational Procedure

a. Inspection Scope

The team reviewed the SSA, Off-Normal Operating Procedures (ONOPs), piping and instrumentation diagrams (P&IDs), electrical drawings, the UFSAR, and other supporting documents for postulated fires in the selected FZs. The review was performed to verify that the shutdown methodology properly identified the components and systems necessary to achieve and maintain safe shutdown (SSD) conditions. Plant walkdowns were also performed to verify that the plant configuration was consistent with that described in the Fire Hazards Analysis, the SSA, and P&IDs. These inspection activities focused on ensuring the adequacy of systems selected for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring instrumentation and support systems functions. The team reviewed the systems and components credited for use during shutdown to verify that they would remain free from fire damage.

The team reviewed the operational implementation of the SSD strategy that would be used during a severe fire in any of the selected FZs. This review included the training program for licensed and non-licensed operators to verify that the training reinforced the shutdown methodology in the SSA and ONOPs for the selected FZs. The team also reviewed shift turnover logs and shift manning to verify that personnel required for SSD were available onsite, exclusive of those assigned as fire brigade members.

The team performed a walk through of procedure steps paying attention to clarity and human factors aspects. Operator manual actions were evaluated to verify that the operators could reasonably be expected to perform the specific actions within the time required to maintain plant parameters within specified limits. Local operator actions were compared to the criteria in Enclosure 2 of NRC IP 71111.05TTP. The team reviewed the licensee's timeline and manual action feasibility report for FZ 58, FZ 68, and FZ 108B. Time critical actions reviewed included electrical power alignment, establishing reactor coolant makeup, and establishing decay heat removal. The team reviewed and walked down applicable sections of the following fire response ONOPs:

- 0-ONOP-016.10, Appendix 58 (FA F/FZ 58), Rev. Dated 9/13/2006
- 0-ONOP-016.10, Appendix 68 (FA OO/FZ 68, Rev. Dated 9/23/2004
- 0-ONOP-016.10, Appendix 108B (FA V/FZ 108B), Rev. Dated 4/01/2004

The team reviewed Condition Reports (CR) 2006-21135 and 2006-22092, “Regulatory Expectations With Appendix R Paragraph III.G.2, Operator Manual Actions,” and CR 2006-29106, “Fire Protection Transition to NFPA 805," to verify that the licensee had identified operator manual actions for post-fire SSD in III.G.2 areas and had plans in place to assess and track resolution of the manual action issue as part of the plant-wide risk evaluation during transition to NFPA 805.

b. Findings

No findings of significance were identified.

.2 Protection of SSD Capabilities

a. Inspection Scope

Through a combination of design information review and in-plant inspection, the team ascertained the fire protection features in place to protect SSD capability as compared to the separation and design requirements of Appendix R, Section III.G. For example, use of one-hour fire barriers together with automatic suppression. The team performed reviews aimed at determining whether at least one train of SSD equipment was protected from fire damage. In FZ 58, the three cable trays located directly above motor control center 4C (trays 4FTT10, 3FFT55 and 3FGT555) could be subject to damage due to a fire which could start at the motor control center. Therefore, the team reviewed the function of all the cables routed in those three cable trays in terms of their importance to SSD. In addition, the routing of cables for equipment selected from the shutdown procedure for FZ 58 were reviewed.

With regard to postulated fires in FZs 108B and 68, a concern would be loss of electrical buses located in the areas. To address this concern, the team reviewed the power source for equipment specified to be used in the shutdown procedure for those areas.

b. Findings

No findings of significance were identified.

.3 Passive Fire Protection

a. Inspection Scope

The team inspected the material condition of all the fire barriers surrounding and within the fire areas selected for review. Barriers in use included walls, ceilings, floors, mechanical and electrical penetration seals, doors, dampers and Thermo-Lag 330-1 and 770-1 Electrical Raceway Fire Barrier Systems. Construction details and fire endurance test data which established the ratings of these fire barriers and Electrical Raceway Fire Barrier Systems were reviewed by the team. Engineering evaluations related to fire barriers were reviewed.

Where applicable, the team examined installed barriers to compare the configuration of the barrier to the rated configuration. The overall criterion applied to this element of the inspection procedure was that the passive fire barriers had the capability to contain fires for one hour or three hours as applicable.

b. Findings

No findings of significance were identified.

.4 Active Fire Protection

a. Inspection Scope

The appropriateness of detection and suppression methods for the category of fire hazards in the selected areas was evaluated. With respect to FZs 68 and 108B, the team compared detector layout drawings, actual field location of detectors and NFPA 72E, "Automatic Fire Detectors," for spacing and placement requirements. With regard to FZ 58, the detector layout drawing was compared to NFPA 72E spacing and placement requirements.

The Halon 1301 fire suppression system in FZ 108B was inspected and evaluated. The team walked down the entire Halon system, except for portions above ceiling tiles in the control room. The team reviewed the purchase specification and a calculation aimed at determining the expected leakage of Halon from the protected area after system discharge. The team interviewed cognizant engineers, who were on site when the system was installed, to ascertain what testing had been performed and how leakage had been accounted for in the initial design. The Halon system was evaluated to ensure that the design concentration of 5 percent could be achieved and maintained for the 10 minute hold time period as specified in the UFSAR Fire Protection Program Report. The licensee's program of surveillances to ensure proper quantity of Halon was maintained in the storage bottles and the system pressure was reviewed.

The team also reviewed fire brigade staffing, fire brigade response strategy, fire fighting pre-plans, fire brigade training, and the fire brigade drill program procedures. Particular attention was given to location and capacity of hose stations and approach routes to the FZs. Fire brigade equipment lockers were inspected by the team. Documentation reviews were supplemented by discussion with persons responsible for fire brigade performance to assess the readiness of the fire brigade to suppress any and all fires that may occur.

The team compared the licensee's program of surveillances for smoke detectors to requirements in NFPA standards and manufacturer's recommendations, and reviewed evaluations to modify the time interval between surveillances. Also, for FZ 108B, the team requested and reviewed copies of data sheets for the last two surveillances to determine whether they were consistent with the program.

The overall criterion applied to this portion of the inspection was that the fixed automatic and fire brigade fire suppression had the capacity and capability to suppress credible fires in the selected FZs.

b. Findings

(1) Halon System in FZ 108A

Introduction: The team identified a noncompliance with 10 CFR 50, Appendix R, Section III.G.2.c, in that the automatic fire suppression system required by this part for FZ 108A did not have the capability to suppress fires due to the swapping of flexible piping between Halon storage bottles and the protected area. The Halon piping was restored to correct alignment during the inspection. Pursuant to published NRC policy for plants with fire protection programs in transition to NFPA 805 enforcement discretion was exercised.

Description: FZ 108A and 108B are each protected by Halon 1301 fire suppression systems which should be designed in accordance with NFPA 12A - 1980, Halon 1301 Fire Extinguishing Systems. These systems are automatically actuated by cross-zoned fire detection systems. The systems were initially designed to provide a 6 percent (by volume) Halon concentration with a hold time of 30 minutes. After further licensee review of the Control Building heating ventilating and air conditioning (HVAC) system operational line-up and potential room leakage issues, the design basis concentration for these areas was changed to provide a 5 percent Halon concentration with a hold time of 10 minutes. These areas primarily contained electrical equipment located in metal cabinets with a limited amount of cable routed in cable trays.

The team requested the licensee provide the concentration discharge test reports for these areas to confirm that a 5 percent Halon concentration could be maintained for a hold time of 10 minutes. The team noted that the Control Building ventilation system would remain in operation while the closure of fire dampers would be relied upon to hold the Halon 1301 concentration within the protected room. When it was found that licensee discharge testing had not been performed during system installation, the team requested all engineering documentation that would demonstrate that the required design concentration could be achieved and maintained for the committed hold time period. Further, the team requested that the licensee confirm the quantity of Halon in the bottles connected to the system, so that it could be compared to the data sheet provided by the vendor.

As a result of this inquiry, the licensee determined that the Halon bottles for FZ 108A and 108B were misaligned such that the Halon bottle for FZ 108A was connected to Halon system 108B and visa versa. Because FZ-108A is larger than FZ-108B, less than the expected quantity of Halon could be discharged into FZ-108A. Applying formula 2-5.2 from NFPA 12A assuming a room volume of 9,625 cubic feet and a quantity of Halon injected of 221 pounds, the team calculated the initial concentration of Halon in the misaligned configuration would be about 5.55 percent.

Licensee calculations assuming the correct alignment of bottles showed that approximately 0.5 percent of the initial concentration would be lost over 10 minutes due to leakage through openings in the envelope of the protected space (such as under doors and through dampers). This calculated 0.5 percent loss in concentration was due to the relative greater density of Halon gas as compared to air. However, it did not account for the additional inflow of fresh air that would leak past nominally closed dampers due to the fact that HVAC fans would continue to run to supply air to other rooms in the control building. Therefore, the team concluded that the misaligned system could not supply sufficient Halon to meet the 10 minute soak time at 5 percent concentration.

The apparent cause for the misaligned Halon bottles is attributable to human error, lack of clear procedural guidance and insufficient equipment labeling.The licensee generated a CR and declared the FZ-108A and FZ-108B Halon systems degraded and stationed fire watch personnel in accordance with fire protection compensatory requirements.

Analysis: Because the Halon storage bottles to FZs 108A and 108B were swapped, the Halon suppression system could not provide a 5 percent Halon concentration to Zone 108A for 10 minutes, as required by NFPA 12A (to which Turkey Point is committed) for suppressing or extinguishing a surface fire. This degradation of the Halon system for FZ 108A was a performance deficiency in that it resulted in a standard not being met, and the cause was under the control of the licencee.

The finding is of more than minor significance because a system designed to mitigate the consequences of external events, i.e. fire, was affected. The finding was evaluated using the Fire Protection Phase 1 Worksheet contained in Manual Chapter 0609, Appendix F, Attachment 1, and it did not screen out as very low significance. However, Inspection Manual Chapter 0305, Operating Reactor Assessment Program, states that the NRC will refrain from processing findings identified during the licensee's transition to 10 CFR 50.48 (c) through the Significance Determination Process (SDP) if criteria in the enforcement policy are met [these criteria were met as discussed under the heading Enforcement below] and if the following additional criteria are met. Criterion A was met in that the licensee placed the finding into their corrective action program as CR 2007-2218. Criterion B refers back to the enforcement policy. Criterion C was met in that the licensee issued immediate instructions for hourly inspection of FZ 108A for the purposes of detecting and preventing fires. The correct piping alignment was restored on February 5, 2007.

The finding is less than Red safety significance. The estimated frequency of fires resulting from ignition sources in FZ 108A multiplied by the probability of failure of those mitigating systems which are independent of the fire area gives a probability result significantly less than $1x10^{-4}$ which is the threshold for Red or high safety significance.

Enforcement: The automatic fire suppression system installed for FZ 108A (i.e. the Halon system) was required to meet the requirements of 10 CFR 50, Appendix R, Section III.G.2.c. Because the required system was degraded as a result of a performance deficiency, a violation of that requirement occurred. The non-conforming condition existed at least since 1998 and possibly since initial system installation about 1985. However, pursuant to the Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48), enforcement action will not be taken for the noncompliance. The team determined that circumstances surrounding the finding met the criteria contained in the interim policy. Although the condition of the switched storage bottles was identified as a direct result of inspection questions submitted to the licensee by the team, the licensee presented evidence that the reviews planned as part of the transition to 10 CFR 50.48 (c) would have identified the problem (i.e., the fire protection code compliance portion of the review). Compensatory measures in the form of fire watches had been established immediately after discovery, and the storage bottles were aligned as intended by the design on February 5, 2007. The nature of the problem was such that it would not likely have been discovered by routine surveillance or quality assurance activities. There was no evidence that the noncompliance was willful.

(2) Halon 1301 Indeterminate Room Leakage

Introduction: The team identified an unresolved item (URI) because the licensee had not determined with sufficient certainty, by calculation or test, the leakage rate of Halon from FZs 108A or 108B. Therefore, there was uncertainty as to whether the required 5 percent concentration could be held for 10 minutes throughout the protected volume.

Description: The Turkey Point Fire Protection Program Report states that the Halon system for the inverter rooms (FZ-108A & FZ-108B) is capable of maintaining a concentration above 5 percent, by volume, for 10 minutes even with continued operation of the HVAC systems. This criteria is consistent with NFPA 12A requirements for suppressing a surface fire. The licensee could not produce a calculation or test results which demonstrated that this requirement could be met. Cognizant licensee engineers stated that the initial design accounted for leakage by assuming an opening in the room envelope equal to 1 percent of the envelope surface area.

Applying formula 2-5.2 from NFPA 12A and using the original design basis value for weight of Halon in the storage tanks, the team calculated that the initial concentrations of Halon in FZs 108A and 108B would be 6.6 percent and 6.5 percent, respectively. Leakage could not be estimated with sufficient accuracy during the time frame of the inspection since it involved leakage past closed fire dampers driven by fans.

After the inspection, the licensee developed and transmitted to the team calculation PTN-BFSM-07-001, “Halon Reconstitution for Concentration in Fire Zones 108A & 108B,” dated March 5, 2007. This calculation was aimed at reconstituting the type of calculation that would have been performed by the system vendor in 1985. It used calculation methods contained in NFPA 12A-1980.

The calculation determined the initial concentration necessary to account for density driven leakage through openings with the assumption of efficient air/Halon mixing, i.e. in leakage of fresh air does not accumulate in the upper portions of the room. It concluded that approximately 0.5 percent concentration would be lost due to density driven leakage which means that 5.5 percent initial concentration would be sufficient to meet system requirements. The calculation further concluded that because the initial concentration was about 6.5 percent, there was a 1 percent margin with regard to initial concentration. This margin would compensate for fan driven leakage past nominally closed dampers. However, fan driven leakage into and out of the room was not quantified in the PTN-BFSM-07-001 calculation.

The PTN-BFSM-07-001 calculation was not accepted by the team as resolving the issue for two reasons. First, the assumption of efficient air/Halon mixing does not appear to be valid because efficient mixing requires fans be installed for that purpose which the room does not have; and second, it is not obvious that fan driven leakage would be insignificant. Calculations by the team, based on estimated values, indicate that both fan driven leakage and stratification of concentrations (or lack of efficient mixing) need to be addressed in a quantified fashion. For these reasons, the team could not make a conclusion as to whether maintaining 5 percent concentration for 10 minutes was achievable in Fire Zones 108A and 108B. Therefore, the matter is identified as URI 05000250, 251/2007006-01, Halon Concentration in FZs 108A and 108B May Not Be Adequate.

.5 Protection From Damage From Fire Suppression Activities

a. Inspection Scope

Through a combination of in-plant inspection and drawing reviews, the team evaluated the selected fire areas from the viewpoint of whether redundant trains of systems required for hot shutdown could be subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. The team considered the effects of water, drainage, heat, hot gasses, and smoke that could potentially damage redundant trains.

b. Findings

No findings of significance were identified.

.6 Control of Combustibles and Ignition Sources

a. Inspection Scope

The team evaluated the licensee's program for control of combustible materials and ignition sources through review of plant procedures. The team walked down the selected plant fire areas to observe the storage of permanent and transient combustibles.

These reviews and walkdowns were accomplished to ensure that the licensee had properly evaluated in-situ combustible fire loads, controlled hot work activities, and limited transient fire hazards in a manner consistent with the plant administrative controls and fire protection procedures. The team conducted these reviews to assess whether the licensee was taking reasonable precautions to prevent fires from starting.

b. Findings

No findings of significance were identified.

.7 Communications

a. Inspection Scope

The team reviewed plant communication capabilities to evaluate the availability of the communication systems to support plant personnel in the performance of local operator manual actions to achieve and maintain SSD conditions. During this review the team considered the effects of ambient noise levels, and reliability. The team also reviewed the communication systems available at different locations within the plant. Both fixed and portable communication systems were reviewed for the impact of fire damage in the selected FZs.

During a walkthrough of the SSD procedures with a plant operator, the team observed the availability of portable radios and fixed communication equipment. In addition, the team inspected the locker where extra batteries were stored and maintained on charging stations specifically for radios used by the operators performing the SSD procedures.

The team also reviewed preventive maintenance and surveillance test records to verify that the communication equipment was being properly maintained.

Similar reviews were made in relation to communications equipment needed by the fire brigade.

b. Findings

No findings of significance were identified.

.8 Emergency Lighting

a. Inspection Scope

The team observed the placement and coverage area of fixed eight-hour battery pack emergency lights throughout the selected fire areas to evaluate their adequacy for illuminating access and egress pathways and any equipment requiring local operation and/or instrumentation monitoring for post-fire SSD actions.

The team also reviewed the availability of portable eight-hour battery powered emergency lights located in storage lockers in selected plant locations. The portable eight-hour battery powered emergency lights were credited in the licensee's FPP for operator access and egress routes, and to perform the operator manual actions required by plant fire response procedures.

Preventive maintenance procedures and completed surveillance tests were reviewed to ensure adequate surveillance testing and periodic battery replacements were in place to ensure reliable operation of the fixed and portable emergency lights. The team reviewed the completed eight-hour discharge test for the fixed and portable emergency lights to verify they were rated for at least eight-hour capacity. The team also reviewed vendors' manuals to ensure that the emergency lights were being maintained consistent with the manufacturer's recommendations.

b. Findings

No findings of significance were identified.

.9 Cold Shutdown Repairs

a. Inspection Scope

The licensee's analysis did not identify a need for post-fire repairs to achieve a cold shutdown condition. Thus, cold shutdown repairs were not reviewed during this inspection.

b. Findings

No findings of significance were identified

.10 Compensatory Measures

a. Inspection Scope

The team reviewed the administrative controls for out-of-service or degraded fire protection features, such as active suppression and detection systems and passive fire protection features. The team reviewed the out-of-service equipment listed in the Fire Protection Impairment (FPI) database for the FZs selected for the inspection.

The fire protection impairment compensatory measures listed in the FPI database were reviewed to verify that reasonable compensatory measures were put in place commensurate with the requirements of the licensee's FPP. The team also verified that compensatory measures were adequate to compensate for a degraded function or feature until appropriate corrective actions were taken.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

Inspection Scope

The team reviewed self-assessments, and approximately 20 CRs related to fire protection and SSD. The latest Health Reports for the lighting and comunications systems were reviewed. This review was to verify that the licensee was identifying issues related to this inspection area at an appropriate threshold and correcting them in a timely manner.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

On February 9, 2007, the lead inspector presented the inspection results to Mr. T. Jones, Site Vice President, and other members of his staff. Proprietary information is not included in this report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Antignano, Fire Protection Supervisor
V. Barry, Operations
C. Bible, Engineering Director
J. Connolly, Licensing Manager
A. Dunstan, Fire Protection Engineer, Engineering Supervisor
S. Greenlee, Engineering Manager & Acting Plant Manager
O. Hanek, Licensing Engineer
T. Jones, Site Vice President
J. Lang, Corporate Engineer
B. Thaker, Principal Electrical Engineer

NRC Personnel

C. Payne, Chief, Engineering Branch 2
J. Shea, Director, Division of Reactor Safety
J. Stewart, Senior Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000250, 251/2007006-01	URI	Halon Concentration in Fire Zones 108A and 108B May Not Be Adequate (1R05.04 (b) (2)).

LIST OF DOCUMENTS REVIEWED

Condition Reports Generated as a Result of the Inspection

2007-2099, Non-Conservative Assumptions in Halon Dilution Calculation
2007-2218, Halon Bottles Aligned to Opposite Inverter Room
2007-2262, Document Inconsistencies for FD-80A Actuation Features
2007-2341, Combustible Loading Calc M08-390-01 Not Updated
2007-2367, Inconsistent Structural Steel Fireproofing Analysis Methodology
2007-3549, Fire Barrier Inspection Scope and Requirements
2007-3554, Fire Drill Format by Fire Zone
2007-3650, Procedure Enhancements for Use of Appendix R Portable Lights
2007-3653, Enhancements to Pre-Plans for Brigade Training
2007-3711, Record of Procedure Validation/Timeline for Manual Actions
2007-3802, Procedure Enhancement to Reduce Operator Burden
2007-3971, Lost Records for E-Lighting Inspections
2007-3972, Calculation Errors for Halon Dilution and Room Heat-Up Tempereatures
2007-3975, Pre-Fire Plans are Weak and Nearer the Lower End of the Industry
2007-3965, No Exemption from III.J for Portable E-lights in Lieu of Fixed E-Lights
2007-3976, Fire Drills are not Being Performed in All Areas
2007-3978, Halon Temperature is not Factored in the Liquid Level Surveillance

Licensing Basis Documents

Turkey Point Units 3 & 4 UFSAR, Appendix 9.6A, Fire Protection Program Report, Sections 2.4, 2.5, 3.7, and 3.8, Rev. dated 6/23/2005
NRC Fire Protection Safety Evaluation Report, dated 3/21/1979

Applicable Codes and Standards

NFPA 12A, 1980, Halon 1301 Fire Extinguishing Systems
NFPA 72E, 1982, Automatic Fire Detectors

Fire Protection and Safe Shutdown Analysis

5610-E-2000, Turkey Point Units 3&4 Appendix R Essential Cable List, Rev. 22
5610-M-722, Turkey Point Units 3&4 Appendix R Safe Shutdown Analysis, Rev. 30
5610-M-723, Turkey Point Units 3&4 Appendix R Essential Equipment List, Rev. 20
PTN-ENG-SEMS-03-045, Appendix R Safe Shutdown Timelines for Manual Actions, Rev. 0
Turkey Point Units 3&4 Manual Action Timelines and Feasibility Evaluation, Rev. 0, 12/30/2003

Calculations

M12-202-05, Rev 0, Leakage Through Dampers and Verification of the Ability of Rooms to Hold Required Halon Concentration.
M12-202-06, Rev 2, Embedded Conduit Analysis - Fire Models

PTN-BFSM-07-001, Halon Reconstitution for Concentration in Fire Zones 108A & B, Rev.0, dated 03/05/07

Procedures

0-ADM-016, Fire Protection Program, Rev Approval Date - 08/25/06
0-ADM-016.1, Transient Combustible and Flammable Substances Program, Rev Approval Date - 11/17/05
0-ADM-016.2, Fire Brigade Program, Rev Approval Date - 04/17/06
0-ADM-016.3, Fire Protection Impairments, Rev Approval Date - 06/16/04
0-ADM-016.4, Fire Watch Program, Rev Approval Date - 10/31/06
0-ADM-016.5, Hot Work Program, Rev Approval Date - 02/06/06C
0-ONOP-016.2, Response to Spurious Actuation of a Fire/Isolation Damper, Rev Approval Date - 07/17/97
0-ONOP-016.8, Response to Fire/Smoke Detection System Alarm, Rev Approval Date - 03/24/04
0-ONOP-016.10, Pre-Fire Plan Guidelines and Safe Shutdown Manual Actions, Note: Each page had a rev date
0-OP-016.5, Halon Suppression System, Rev Approval Date - 02/06/02C
0-ONOP-016.8, Response to a Fire/Smoke Detection System Alarm, Rev. dated 3/24/2004
0-ONOP-016.10, Pre-Fire Plan Guidelines and Safe Shutdown Manual Actions, Rev. dated 9/13/2006C
0-ONOP-016.10, Appendix 58 (FA F/FZ 58), Rev. dated 9/13/2006
0-ONOP-016.10, Appendix 68 (FA OO/FZ 68, Rev. dated 9/23/2004
0-ONOP-016.10, Appendix 108B (FA V/FZ 108B), Rev. dated 4/01/2004
0-SME-016.4, Fire Damper Inspection, Rev Approval Date - 10/31/06
0-SFP-016.3, Fire Barrier and Structural Steel Fireproofing Inspection, Rev Approval Date - 05/02/02
0-SFP-016.5, Fire Protection Equipment Surveillance, Rev Approval Date - 09/06/06C
FPAD-10, Rev 4, Fire Brigade Training
0-SME-104.1, Self Contained, Battery Powered, Emergency Lighting Quarterly Performance Test, Dated 07/03/06C1
0-SME-104.2, Self Contained, Battery Powered, Emergency Lighting Performance Test, Dated 06/12/06
4-OSP-300.4, Dedicated Alternate Shutdown Communications System Operability Test, Dated 11/25/03

Specifications and Guides

Specification MN-3.21, Rev 12, Installation and Inspection Guidelines for the Thermo-Lag Fire Barrier Material.
Specification 5177-265-M-658, Rev 5, Technical Specification for Halogenated Agent Extinguishing Systems for Appendix R Modifications

Drawings

Active and Passive Fire Protection

5610-A-60, Sheet 1, Rev 14, Floor Plan at Elevation 10' and Below, Showing Fire Walls, Doors, Dampers, and Fireproofing
5610-A-60, Sheet 2, Rev 6, Floor Plan at Elevation 10' and Below, Showing Detection Suppression and Lighting
5610-A-61, Sheet 1, Rev 19, Floor Plan at Elevation 18', Showing Fire Walls, Doors, Dampers, and Fireproofing
5610-A-61, Sheet 2, Rev 14, Floor Plan at Elevation 18', Showing Detection Suppression and Lighting
5610-A-62, Sheet 1, Rev 9, Floor Plan at Elevation 30', Showing Fire Walls, Doors, Dampers, and Fireproofing
5610-A-62, Sheet 2, Rev 7, Floor Plan at Elevation 30', Showing Detection Suppression and Lighting
5610-A-62, Sheet 1, Rev 12, Floor Plan at Elevation 42', Showing Fire Walls, Doors, Dampers, and Fireproofing
5610-A-62, Sheet 2, Rev 11, Floor Plan at Elevation 42', Showing Detection Suppression and Lighting
5610-A-179, Sheet 1, Rev 9, Fire Barrier Details
5610-A-179, Sheet 2, Rev 2, Fire Barrier Details
5610-C-652, Sheet 1, Rev 5, Auxiliary Building, Floor Plan, Area 8, Battery Room - Elevation 42'-0", Plans & Section
5610-C-1358, Sheet 1, Rev 8, Diesel Generator Building, DC Equipment Room Plan, Section & Details
5610-E-119A, Sheet 1, Rev 7, Raceway Fire Protection Wrap, El. 18'-0", Area 8
5610-E-128A, Sheet 1, Rev 4, Raceway Fire Protection Wrap, El. 30'-0", Area 16
5610-E-135A, Sheet 1, Rev 7, Raceway Fire Protection Wrap, El. 42'-0", Area 8
5610-E-160A, Sheet 1, Rev 8, Raceway Fire Protection Wrap, El. 18'-0", Area 3
5610-M-3016, Sheet 9, Rev 1, Fire Protection System, Halon Suppression System
5610-M-3025, Sheet 3, Rev 1, Control Building Ventilation DC Equipment/Inverter Rooms HVAC

Safe Shutdown Analysis

5610-T-E-1592, 125 VDC & 120 VAC Electrical Distribution, Rev. 41
5610-M-430-204, Charging Pump Pressure Discharge Flow & CVCS Hand Controls, Rev 3
5613-E-674, Load List for AC Panel 3P09, Rev 9
5613-M-3030, Sheet 1, Unit 3 Component Cooling Water System P&ID, Rev. 20
5613-M-3030, Sheet 4, Unit 3 Component Cooling Water System P&ID, Rev. 22
5613-M-3030, Sheet 5, Unit 3 Component Cooling Water System P&ID, Rev. 17
5613-M-3041, Sheet 2, Unit 3 Reactor Coolant System P&ID, Rev. 38
5613-M-3047, Sheet 1, Unit 3 CVCS Charging and Letdown P&ID, Rev. 19
5613-M-3047, Sheet 2, Unit 3 CVCS Charging and Letdown P&ID, Rev. 48

5613-M-3047, Sheet 3, Unit 3 CVCS Charging and Letdown P&ID, Rev. 22
5613-M-3072, Sheet 1, Unit 3 Main Steam System P&ID, Rev. 29
5613-M-3075, Sheet 1, Unit 3 Auxiliary Feedwater System P&ID, Rev. 16
5614-M-3030, Sheet 1, Unit 4 Component Cooling Water System P&ID, Rev. 25
5614-M-3030, Sheet 3, Unit 4 Component Cooling Water System P&ID, Rev. 19
5614-M-3030, Sheet 4, Unit 4 Component Cooling Water System P&ID, Rev. 21
5614-M-3041, Sheet 2, Unit 4 Component Cooling Water System P&ID, Rev. 35
5614-M-3047, Sheet 1, Unit 4 CVCS Charging and Letdown P&ID, Rev. 19
5614-M-3047, Sheet 2, Unit 4 CVCS Charging and Letdown P&ID, Rev. 51
5614-M-3047, Sheet 3, Unit 4 CVCS Charging and Letdown P&ID, Rev. 25
5614-M-3072, Sheet 1, Unit 4 Main Steam System P&ID, Rev. 31
5614-M-3075, Sheet 1, Unit 4 Auxiliary Feedwater System P&ID, Rev. 15

Lighting & Communications

5610-A-62 SH 3 , Emergency Lighting Tabulation, Rev 20

Records of Completed Surveillances and Tests

0-SME-091.1, Fire and Smoke Detection System Annual Test, for Fire Zone 108B circuit 15, performed on 9/05 per Task 35008083-01, ER/PWO 69/9219
0-SME-091.1, Fire and Smoke Detection System Annual Test, for Fire Zone 108B circuit 15, performed on 9/06 per Task 360011310-01, ER/PWO 69/0947
0-SME-091.1, Fire and Smoke Detection System Annual Test, for Fire Zone 108B circuits 41 & 42, performed on 8/06 per Task 36001307-01, ER/PWO 69/374
0-SME-091.1, Fire and Smoke Detection System Annual Test, for Fire Zone 108B circuits 41 & 42, performed on 8/05 per Task 35008078-01, ER/PWO 69/9219
0-PME-091.1, Outside Containment Smoke Detector Sensitivity Check and Calibration, for Fire Zone 108B circuits 15, 41 & 42, performed on 2/04 per Task 29008011-01, ER/PWO 69/9021
0-SME-104.1, Self Contained, Battery Powered, Emergency Lighting Quarterly Performance Test, completed 5/24/06, 6/26/06, 7/24/06, 8/21/06, 10/16/06, 11/11/06, 11/17/06
0-SME-104.2, Self Contained, Battery Powered, Emergency Lighting Performance Test, completed 4/29/02, 8/16/02, 11/5/03, 5/24/04, 8/6/04, 8/15/05, 1/20/06, 7/26/06,
4-OSP-300.4, Dedicated Alternate Shutdown Communications System Operability Test, completed 8/17/02, 2/4/04, 8/7/05

Vendor Supplied Information

Pytrotronics Protection System Technical Bulletin for D1-3/D1-A3/ D1-B3 Ionization Detectors
Chloride 6 & 12 Volt Hazardous Area Emergency Lighting Units, Series D2, TD2
Carefree Maintenance Free Rechargeable Batteries, Rev 0
Dual Lite Six Volt Emergency Lighting Service Manual

Miscellaneous Documents

Safety Evaluation, JPN-PTN-SEMJ-89-109, Rev 0, Safety Evaluation for Inverter Rooms Halon Dilution
Safety Evalustion, JPN-PTN-SEYS-98-069, Rev. 0, Fire Protection Surveillance reduction Task, approved 2/25/99
Sargent & Lundy Report SL-5246, Rev. 1, Fire Detection and Emergency Lighting Surveillance Reduction Task, dated 4/13/99
Quality Assurance Audit Report, QAO-PTN-05-007, Fire Protection Functional Area Audit, dated December 20, 2005
Plant Lighting System Health Report for Period 2006-4, Dated 1/18/07
Communications System Health Report for Period 2006-4, Dated 1/16/07
Turkey Point Letter (No. L-2005-217) to NRC, dated 11/15/2005, Turkey Point Units 3 and 4, Docket Nos. 50-250 and 50-251, Letter of Intent to Adopt NFPA 805 Performance Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition
NRC Letter dated 12/29/2005, NRC Response to FPL's Letter of Intent to Adopt 10 CFR 50.48(c) (NFPA 805 Rule) for Turkey Point Nuclear Plant Units 3 and 4
NRC Letter dated 09/18/2006, Period of Enforcement Discretion During Implementation of National Fire Protection Association Standard 805, Turkey Point Nuclear Plant, Units 3 and 4
NRC Regulatory Issues Summary 2005-07, Compensatory Measures to Satisfy the Fire Protection Program Requirements
NRC Regulatory Issues Summary 2006-10, Regulatory Expectations With Appendix R Paragraph III.G.2 Operator Manual Actions

Corrective Action Program Documents (CR)

2001-00326, Cable Spreading Room Fan Door Testing for Halon System (Rev. 0, 1 & 2)
2006-22092, OE Regulatory Issue Summary, RIS 2006-10, Regulatory Expectations with Appendix R Paragraph III.G.2 Operator Manual Actions
2006-29106, Fire Protection Transition to NFPA 805
2006-36185, Unanalyzed Condition
2006-36248, UL 910 Replaced by NFPA 262
2006-36263, Rack Mechanism Broken
2006-36366, Fire Barrier Enhancements
2006-36399, Fire Watch Unqualified
2006-36433, Incorrect Compensatory Measures
2006-36435, Incorrect Fire Watch
2006-36448, Obsolete Pytronics Equipment
2006-36486, 0-SME-091.1 Fire Detection Annual test
2006-36500, Fire Detection Program
2006-36920, Appendix r Descriptions
2006-37080, Adverse T-Lag Repair Trend
2006-37220, No Exemption for FZ-999

2006-37306, Detector Alarms During Heavy Rain
2006-37552, Chemistry Lab Fire Alarm
2006-21135, OE RIS-06-010, Regulatory Expectations with Appendix R Paragraph III.G.2 Operator Manual Actions
2007-1596, Turkey Point Fire Protection/Appendix R Quick Hit Self Assessment

LIST OF ACRONYMS

10 CFR 50	Title 10, Part 50, of the Code of Federal Regulations
cfm	Cubic feet per minute
CR	Condition Report
FPI	Fire Protection Impairment
FPP	Fire Protection Program
FZ	Fire Zone
Halon 1301 (Halon)	Bromotrifluoromethane gas effective for extinguishing fires
HVAC	Heating, ventilating and air conditioning
IMC	Inspection Manual Chapter
IP	Inspection Procedure
NFPA	National Fire Protection Association
NRC	U. S. Nuclear Regulatory Commission
ONOP	Off Normal Operating Procedure
P&IDs	Piping and Instrumentation Diagrams
SDP	Significance Determination Process
SSA	Safe Shutdown Analysis
SSD	Safe Shutdown
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item