



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

August 10, 2011

EA-11-173

Mr. Jon A. Franke, Vice President
Crystal River Nuclear Plant (NA1B)
15760 West Power Line Street
Crystal River, FL 34428-6708

**SUBJECT: CRYSTAL RIVER UNIT 3 - NRC TRIENNIAL FIRE PROTECTION
INSPECTION REPORT NO. 05000302/2011008 AND EXERCISE OF
ENFORCEMENT DISCRETION**

Dear Mr. Franke:

On April 21, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Crystal River Unit 3 Nuclear Plant. The enclosed inspection report documents the inspection results, which were discussed with Mr. Jon Franke, Site Vice President, and members of your staff on April 26, 2011. As a result of post-inspection analysis of the inspection findings by the NRC and your staff, the nature of the results changed from that discussed on April 26, 2011, and these changes were discussed by telephone with Mr. Tim Howard, Equipment Performance Supervisor, and others on June 6, 2011. On July 14, 2011, a final exit meeting was conducted to discuss the results of this inspection with Mr. Jeff Swartz, Director of Site Operations and other members of your staff.

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

The report documents two NRC-identified findings of very low safety significance (Green), which were also determined to involve violations of NRC requirements. However, because of the very low safety significance and because the findings were entered into your corrective action program, the NRC is treating the violations as non-cited violations (NCVs) consistent with the guidance provided in Section 2.3.2 of the NRC Enforcement Policy.

In addition, the enclosed report documents a noncompliance identified during the inspection for which the NRC is exercising enforcement discretion in accordance with Section 9.1, of the NRC Enforcement Policy, "Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)." The noncompliance involved a failure to ensure that one train of systems necessary to achieve and maintain hot shutdown conditions was free of fire damage. The NRC concluded that the noncompliance is not associated with a finding of high safety significance and is not taking enforcement action for the noncompliance because it meets the criteria of the NRC's

Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48). In this case, the NRC concluded that: (1) Progress Energy Florida entered the noncompliance into its corrective action program and implemented appropriate compensatory measures; (2) the noncompliance was not associated with a finding that the reactor oversight process significance determination process would evaluate as Red, or it would not be categorized at Severity Level I; (3) it was not willful; and (4) Progress Energy Florida submitted a letter of intent before December 31, 2005, stating its intent to transition to 10 CFR 50.48(c), which includes approaches in National Fire Protection Association Standard 805-2000 Edition. Regarding compensatory measures, the licensee has established roving fire watches for the 95 foot and 119 foot elevations of the auxiliary building for plant modes 1, 2, and 3 until this issue is resolved. Based on the results of the NRC's inspection and assessment, I have been authorized, after consultation with the Regional Administrator, to exercise enforcement discretion in accordance with Section 9.1, of the NRC Enforcement Policy, "Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)," and refrain from issuing enforcement for this noncompliance. Furthermore, based on the above corrective actions and in accordance with NRC Inspection Manual Chapter 0305, "Operating Reactor Assessment Program," Sections 11.05.b and 11.05.c, the NRC will also refrain from including the noncompliance in the Agency Action Matrix.

If you contest any NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC, 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-001; and the NRC Resident Inspector at the Crystal River Unit 3 site.

In addition, if you disagree with the cross-cutting aspects assigned to the findings in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, RII, and the NRC Senior Resident Inspector at the Crystal River Unit 3 site.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any), 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). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Joel T. Munday, Director
Division of Reactor Safety

Docket No. 50-302
License No. DPR-72

Enclosure:
NRC Triennial Fire Protection Inspection Report 05000302/2011008
w/Attachment: Supplemental Information

cc w/encl.: (See page 3)

Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48). In this case, the NRC concluded that: (1) Progress Energy Florida entered the noncompliance into its corrective action program and implemented appropriate compensatory measures; (2) the noncompliance was not associated with a finding that the reactor oversight process significance determination process would evaluate as Red, or it would not be categorized at Severity Level I; (3) it was not willful; and (4) Progress Energy Florida submitted a letter of intent before December 31, 2005, stating its intent to transition to 10 CFR 50.48(c), which includes approaches in National Fire Protection Association Standard 805-2000 Edition. Regarding compensatory measures, the licensee has established roving fire watches for the 95 foot and 119 foot elevations of the auxiliary building for plant modes 1, 2, and 3 until this issue is resolved. Based on the results of the NRC's inspection and assessment, I have been authorized, after consultation with the Regional Administrator, to exercise enforcement discretion in accordance with Section 9.1 of the NRC Enforcement Policy, "Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)," and refrain from issuing enforcement for this noncompliance. Furthermore, based on the above corrective actions and in accordance with NRC Inspection Manual Chapter 0305, "Operating Reactor Assessment Program," Sections 11.05.b and 11.05.c, the NRC will also refrain from including the noncompliance in the Agency Action Matrix.

If you contest any NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC, 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-001; and the NRC Resident Inspector at the Crystal River Unit 3 site.

In addition, if you disagree with the cross-cutting aspects assigned to the findings in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, RII, and the NRC Senior Resident Inspector at the Crystal River Unit 3 site.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any), 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). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Joel T. Munday, Director
Division of Reactor Safety

Docket No. 50-302
License No. DPR-72

Enclosure:
NRC Triennial Fire Protection Inspection Report 05000302/2011008
w/Attachment: Supplemental Information

cc w/encl.: (See page 3)

*See previous concurrence page.

☒ PUBLICLY AVAILABLE

☐ NON-PUBLICLY AVAILABLE

☐ SENSITIVE

☒ NON-SENSITIVE

ADAMS: ☒ Yes

ACCESSION NUMBER: ML112230108

☒ SUNSI REVIEW COMPLETE

☒ FORM 665 ATTACHED

OFFICE	RII: DRS	RII: DRS	RII: DRS	RII: DRS	RII: DRP	RII: EICS	RII: DRS
SIGNATURE	RA	RA	RA	RA	RA	RA	RA
NAME	J. Dymek	N. Merriweather	M. Thomas	L. Suggs	D. Rich	S. Sparks	R. Nease
DATE	07/15/2011	07/29/2011	07/15/2011	07/15/2011	07/27/2011	07/28/2011	07/27/11
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: S:\DRS\ENG BRANCH 2\REPORTS\CRYSTAL RIVER\INSPECTION REPORT\REPORT 2011-008\CR3_2011008_TFPI_RPT REV6_FINAL_DOCX.DOC

cc w/encl:

Kelvin Henderson
General Manager
Nuclear Fleet Operations
Progress Energy
Electronic Mail Distribution

Brian C. McCabe
Manager, Nuclear Oversight
Shearon Harris Nuclear Power Plant
Progress Energy
Electronic Mail Distribution

James W. Holt
Plant General Manager
Crystal River Nuclear Plant (NA2C)
Electronic Mail Distribution

Stephen J. Cahill
Director - Engineering Nuclear
Crystal River Nuclear Plant (NA2C)
Electronic Mail Distribution

R. Alexander Glenn
General Counsel
Progress Energy
Electronic Mail Distribution

Jeffrey R. Swartz
Director Site Operations
Crystal River Nuclear Plant
Electronic Mail Distribution

Donna B. Alexander
Manager, Nuclear Regulatory Affairs
(interim)
Progress Energy
Electronic Mail Distribution

Thomas Saporito
Consulting Associate
(Public Correspondence Only)
Post Office Box 8413
Jupiter, FL 33468

William A. Passetti
Chief
Florida Bureau of Radiation Control
Department of Health
Electronic Mail Distribution
Daniel R. Westcott

Supervisor
Licensing & Regulatory Programs
Crystal River Nuclear Plant (NA1B)
Electronic Mail Distribution

Joseph W. Donahue
Vice President
Nuclear Oversight
Progress Energy
Electronic Mail Distribution

Jack E. Huegel
Manager, Nuclear Oversight
Crystal River Nuclear Plant
Electronic Mail Distribution

David T. Conley
Senior Counsel
Legal Department
Progress Energy
Electronic Mail Distribution

Mark Rigsby
Manager, Support Services - Nuclear
Crystal River Nuclear Plant (NA2C)
Electronic Mail Distribution

Senior Resident Inspector
U.S. Nuclear Regulatory Commission
Crystal River Nuclear Generating Plant
U.S. NRC
6745 N Tallahassee Rd
Crystal River, FL 34428

Attorney General
Department of Legal Affairs
The Capitol PL-01
Tallahassee, FL 32399-1050

Bryan Koon
Director
Florida Division of Emergency Management
Electronic Mail Distribution

Chairman
Board of County Commissioners
Citrus County
110 N. Apopka Avenue
Inverness, FL 36250

Letter to Jon A. Franke from Joel T. Munday dated August 10, 2011.

SUBJECT: CRYSTAL RIVER UNIT 3 - NRC TRIENNIAL FIRE PROTECTION
INSPECTION REPORT NO. 05000302/2011008 AND EXERCISE OF
ENFORCEMENT DISCRETION

Distribution w/encl:

RIDSNRRDIRS

PUBLIC

RidsNrrPMCrystal River Resource

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 05000302

License Nos.: DPR-72

Report Nos.: 05000302/2011008

Licensee: Progress Energy Florida (Florida Power Corporation)

Facility: Crystal River Unit 3

Location: 15760 West Power Line Street
Crystal River, FL 34428-6708

Dates: April 4 – 8, 2011 (Week 1)
April 18 – 21, 2011 (Week 2)

Inspectors: L. Suggs, Reactor Inspector (Lead Inspector)
J. Dymek, Reactor Inspector
N. Merriweather, Senior Reactor Inspector
M. Thomas, Senior Reactor Inspector

Approved by: Joel Munday, Director
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000302/2011-008; 04/04 - 08/2011, and 04/18 – 21/2011; Crystal River Unit 3 Nuclear Generating Plant; Fire Protection and Other Activities

This report covers an announced two-week period of inspection by triennial fire protection inspectors composed of four regional inspectors. Two Green non-cited violations were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

- Green. The inspectors identified two examples of a non-cited violation of Crystal River Unit 3 Operating License Condition 2.C (9), for the failure to adequately evaluate changes to the approved Fire Protection Program. Specifically, in 1999, and 2003, the licensee revised their fire protection program to increase the combustible loading beyond the maximum permissible limits for FA CC-124-116, 480V ES Switchgear Bus Room 3B and FA CC-124-117, 480V ES Switchgear Bus Room 3A, respectively without performing an evaluation to ensure compliance with the approved Fire Protection Program. The licensee initiated nuclear condition reports 461209, and 476342 to address this issue.

The finding was more than minor because it affected the reactor safety mitigating system cornerstone attribute of protection against external events (i.e. fire). For both examples the selection of a "low" degradation rating was supported by screening criteria provided in Inspection Manual Chapter (IMC) 0609, Appendix F, "Fire Protection Significance Determination Process" as well as IMC 0609, Appendix F, Attachment 2 "Degradation Rating Guide Specific to Various Fire Protection Elements." Based on the above criteria, this finding is screened as having very low safety significance (Green) in Phase 1 of the Significance Determination Process.

The performance deficiency was not assigned a cross cutting aspect as this deficiency occurred over three years ago and is therefore not reflective of current plant performance. (Section 1R05.01.b.(1))

- Green. The inspectors identified a non-cited violation of Crystal River Unit 3 (CR3) Technical Specification 5.6.1.1.a., for inadequate guidance in procedure OP-880B, Appendix "R" Turbine Building Post-Fire Safe Shutdown Information. Specifically, the procedure could not have been performed as written because it did not identify the appropriate equipment that was to be manipulated to ensure that the reactor coolant pumps remained de-energized after being secured in the event of a fire in turbine building Fire Zones TB-95-400A, TB-119-400E, or TB-145-400F. Additionally, procedure OP-880B did not provide adequate guidance regarding how CR3 operators would communicate with Crystal River Unit 1/Unit 2 (CR1/CR2) operators, and did not specify if a reliable means of communications was available. The licensee initiated nuclear condition reports 460602, and 461736 to address this issue.

Enclosure

The inspectors determined that inadequate safe shutdown procedure guidance was a performance deficiency. This finding was more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and it affected the cornerstone objective of protection against external events (i.e., fire). The inspectors assessed this finding using NRC Inspection Manual Chapter 0609, Appendix F, Fire Protection Significance Determination Process. The inspectors determined that this finding was of very low safety significance (Green) because during the time that procedure OP-880B was issued and in effect (April 16, 2010, to April 22, 2011), CR3 was in cold shutdown and procedure OP-880B was not applicable. The inspectors determined that the cause of this finding had a cross-cutting aspect in the Human Performance Area, Work Control Component, in that, the licensee did not address the need for CR3 work groups to maintain interfaces with offsite organizations (i.e., CR1/CR2), to communicate and coordinate with each other during activities in which interdepartmental coordination was necessary to ensure plant and human performance. (Section 1R05.01.b.(2)).

B. Licensee Identified Violations

None

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R05 Fire Protection

This report documents the results of a triennial fire protection inspection of the Crystal River Unit 3 (CR3) Nuclear Generating Plant. The inspection was conducted in accordance with the guidance provided in NRC Inspection Procedure (IP) 71111.05TTP, "Fire Protection-National Fire Protection Association (NFPA) 805 Transition Period (Triennial)," dated December 24, 2009. The objective of the inspection was to review a minimum sample of three risk-significant fire areas to evaluate implementation of the fire protection program (FPP), and to review site specific implementation of at least one B.5.b mitigating strategy as well as the storage, maintenance, and testing of B.5.b mitigating equipment. The sample fire areas (FAs), and associated fire zones (FZs) were chosen based on a review of available risk information as analyzed by a senior reactor analyst from Region II, a review of previous inspection results, plant walk downs of fire areas, consideration of relational characteristics of combustible material to targets, and location of equipment needed to achieve and maintain safe shutdown (SSD) of the reactor. In selecting a B.5.b mitigating strategy sample, the inspectors reviewed licensee submittal letters, safety evaluation reports (SER), licensee commitments, B.5.b implementing procedures, and previous NRC inspection reports (IR). Section 71111.05-02 of the IP specifies a minimum sample size of three fire areas and one B.5.b implementing strategy for addressing large fires and explosions. This inspection fulfilled the requirements of the procedure by selecting a sample of four fire areas and one B.5.b mitigating strategy. The FAs chosen were identified as follows:

1. FA CC-124-111, Control Complex Control Rod Drive (CRD) and Communication Equipment Room, Elev. 124'.
2. FA TB-400A,E,F, Turbine Building, Elev. 95' up to building roof at Elev. 210'.
3. FA CC-124-115, Control Complex "B" Emergency Feedwater Initiation and Control (EFIC) Room, Elev. 124'.
4. FA CC-95-101A, Control Complex Health Physics and Chemistry Areas, Elev. 95'.

The inspectors evaluated the licensee's FPP against applicable requirements, including CR3 Operating License Condition 2.C(9), "Fire Protection;" Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A, General Design Criteria 3, "Fire Protection;" 10 CFR Part 50, Appendix R Subsections III.G, III.J, III.L, and III.O; 10 CFR 50.48, "Fire Protection; Appendix A, to Auxiliary Power Conversion System Branch (APCSB) Branch Technical Position (BTP) 9.5-1, Rev. 0 "Guidelines for Fire Protection of Nuclear Power Plants;" NRC Safety Evaluation Reports dated July 27, 1979, January 22, 1981, January 6, 1983, July 18, 1985, and March 16, 1988; CR3 Final Safety Analysis Report (FSAR) Section 9.8, "Plant Fire Protection Program;" and plant Technical Specifications. The review of the B.5.b mitigating strategies was based on the

Enclosure

CR3 Operating License Condition 2.C. (14), "Mitigation Strategy Licensee Condition;" licensee B.5.b submittals; 10 CFR 50.54(hh)(2); and related NRC SERs. The inspectors evaluated all areas of this inspection, as documented below, against these requirements. Specific licensing basis documents reviewed are listed in the Attachment.

.01 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The inspectors evaluated the licensee's ability to achieve hot and cold shutdown assuming a postulated fire in each of the selected fire areas. The inspectors examined those fire protection features provided to limit fire damage to structures, systems and components important to post-fire safe shutdown as required by the approved FPP. The inspectors selected a sample of safe shutdown systems and components associated with reactivity control, reactor coolant makeup, reactor heat removal, and associated support systems such as the electrical power distribution system to evaluate the licensee's ability to safely shutdown the plant.

For the selected fire areas, the inspectors performed physical walkdowns to observe: (1) the material condition of fire protection systems and equipment; (2) the storage of permanent and transient combustibles; (3) the proximity of fire hazards to cables relied upon for safe shutdown and off-site power; and (4) the licensee's implementation of procedures and processes for limiting fire hazards, housekeeping practices, and compensatory measures for inoperable or degraded fire protection systems and credited fire barriers. Reviews were accomplished to ensure that the licensee was maintaining the fire protection systems, had properly evaluated the in-situ combustible fire loads, controlled hot-work activities, and limited transient fire hazards in a manner consistent with operating license conditions, regulatory requirements, and plant administrative and FPP procedures.

The inspectors reviewed the fire fighting fire emergency plans for selected fire areas to determine if appropriate information was provided to the fire brigade members to identify equipment important to safe shutdown to facilitate fire suppression activities, and accomplish the removal of smoke and or water runoff so that operator manual actions (OMAs) required for SSD could be accomplished.

The inspectors reviewed the adequacy of the design and installation of fire suppression systems in: (1) the CRD and Communications Equipment Room; (2) the EFIC Room B; and (3) the Turbine Building Elevation nos. 145'-0," 119'-0" and 95'-0." This was accomplished by review of system vendor drawings, calculations, and code compliance reviews. Walkdowns of the Turbine Building were performed to measure the spatial separation between Turbine Lube Oil or Hydrogen Seal Oil systems, and the routing of emergency diesel and offsite power cables. The location and proper storage of compressed gas cylinders within the Turbine Building was also reviewed to determine if they represented a fire or missile hazard to equipment or cables required for SSD.

Methodology

The inspectors walked down the selected FAs (i.e., CC-95-101A, CC-124-111, CC-124-115, and TB-400A/E/F), and examined the material condition of the fire detection and suppression systems, and fire area boundaries. The inspectors examined CR3 fire

response procedures AP-880, Fire Protection OP-880A, Appendix “R” Control Complex Post-Fire Safe Shutdown Information, and OP-880B, Appendix “R” Turbine Building Post-Fire Safe Shutdown Information and compared them to the FHA, 10 CFR 50 Appendix R Fire Study, Safe Shutdown Analysis flow diagrams, and other design basis documents to determine if equipment required for post-fire safe shutdown was properly identified and adequately protected from fire damage in accordance with the requirements of 10 CFR 50, Appendix R, Section III.G, “Fire Protection of Safe Shutdown Capability” and the approved FPP. Cable routing information by FA was reviewed for a selected sample of safe shutdown components to verify that the associated cables would not be damaged by a fire in the selected fire areas or the licensee’s analysis determined that the fire damage would not prohibit safe shutdown. The inspectors reviewed conduit and cable-tray layout drawings, as well as field walk downs of the cable routing to confirm that at least one train of redundant cables routed in the FAs were adequately protected from fire damage. In cases where local OMAs were in place in-lieu of cable protection of SSD equipment, the inspectors reviewed the OMAs to verify that the OMAs were feasible utilizing the guidance of the NRC IP. A list of SSD components examined for cable routing is included in the Attachment.

Operational Implementation

The inspectors reviewed applicable sections of AP-880, OP-880A, and OP-880B for FAs CC-124-111, CC-124-115, and TB-400A, E, F to verify that the shutdown methodology properly identified the components and systems necessary to achieve and maintain SSD conditions. The inspectors assessed the timeliness of the operators in identifying and assessing the initial plant conditions, response to suspected fire, and subsequent actions credited afterwards. The inspectors performed a walk-through of procedure steps to ensure the implementation and human factors adequacy of the procedure. The inspectors verified the licensee personnel credited for procedure implementation had procedures available, were trained on implementation, and were available in the event a fire occurred. The inspectors also reviewed selected operator actions 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.

b. Findings

(1) Failure to Adequately Evaluate Changes to the Approved Fire Protection Program

Introduction: The inspectors identified two examples of a Green, non-cited violation (NCV) of Crystal River Unit 3 Operating License Condition 2.C (9), for the licensee’s failure to adequately evaluate changes to the approved FPP. Specifically, in 1999, and 2003, the licensee revised their FPP to increase the combustible loading beyond the maximum permissible limits for FA CC-124-116, 480V ES Switchgear Bus Room 3B, and FA CC-124-117, 480V ES Switchgear Bus Room 3A, respectively without performing an engineering evaluation to ensure compliance with the approved FPP. The licensee initiated nuclear condition reports (NCRs) 461209, and 476342 to address this issue.

Description: On July 25, 1985, the licensee submitted a letter entitled “Evaluation of Fire Barrier Deviations,” supporting deviations from requirements for fire protection features at Crystal River Unit 3 for NRC review. This evaluation involved Appendix R, Section III.G.2.a. for separation of cables and equipment, and associated non-safety circuits of

redundant trains by a fire barrier having a 3 hour rating. Elevation 124'-0" of the Control Complex, which was comprised of 7 fire areas, did not meet this requirement due to the construction of the ceiling, which separated this elevation of the Control Complex from the Cable Spreading Room above. As described in the licensee's evaluation, "the assembly was steel plate on protected and unprotected structural steel with a 1-hour directional fire barrier from the top down." The evaluation stated that for all seven fire areas on elevation 124'-0" of the Control Complex; the maximum permissible fire loading was 38,000 BTU/sq. ft. The evaluation further specified that the fire loading for CC-124-116 was 33,774 BTU/sq. ft. and for CC-124-117 was 37,517 BTU/sq. ft. The evaluation concluded that for both FA CC-124-116, and CC-124-117 "administrative limits must be put in place to restrict the amount and type of transient combustibles in the area. The total combustible loading must not exceed 38,000 BTU's/sq. ft."

The inspectors noted that FSAR Table 9-18, "Fire Protection Governing Documents," listed a March 16, 1988, NRC SER, and a Florida Power Corporation (FPC) Letter to the NRC dated July 25, 1985. This SER stated in part, that evaluations submitted by the licensee in a letter dated July 25, 1985, represented the justification for certain conditions pertaining to the plant FPP, specifically as they related the adequacy of certain fire area boundary construction (i.e., walls and floor/ceiling assemblies). It further concluded that based upon the NRC staff's review of the licensee's justifications, the above referenced conditions as described in the evaluation were acceptable.

In 1999, the licensee revised their FPP to allow the inclusion of Thermo-lag Electrical Raceway Fire Barrier System (ERFBS) materials as an in-situ combustible material. It was assigned a value of 7,000 BTU/lb. The amount of Thermo-Lag present was calculated by the licensee's cable and raceway management program, PC-CKS, and was used to update the FHA and the Fire Protection Data System (FPDS) database. Based upon the PC-CKS program, it was determined that FA CC-124-116 contained 1,016 lbs of Thermo-lag, which increased the overall fire loading from the previously evaluated amount of 33,774 BTU/sq. ft to 50,719 BTU/sq. ft for that area. This exceeded the combustible loading limit of 38,000 BTU/sq.ft. specified in the licensee's July 25, 1985, evaluation upon which the NRC based its conclusions in the 1988 SER.

In 1999, the licensee performed Safety Assessment 99-0495, for changes incorporated in CR3 FHA, Revision No. 8. Part A, Description of the Activity stated, "The FHA needed to be updated to reflect the effects of design changes on the combustible material in the plant, and to include the heat release potential of Thermo-Lag per a commitment to the NRC."

In part C, "Determination of Potential Impact on Programs/Plans", the evaluator/reviewer was directed to answer the following screening question "Could the proposed activity have a potential impact on any of the following licensing programs/plans?" The evaluator/reviewer erroneously responded with a "no," which resulted in no additional review or evaluation of the effect on the FPP and fire safe shutdown.

The inclusion of Thermo-Lag as a combustible increased the total combustible loading in FA CC-124-116 above the fire loading limits previously found acceptable by the NRC and therefore, had a potential impact on the FPP. For this reason the evaluator/reviewer should have answered with a "yes," which would have required him to contact the Responsible Organization for their review and approval with written evaluations attached.

Section 3.3 of the FPP, Rev. 15, dated June 29, 1998, required the licensee to review changes for impacts on the FHA. Specific considerations to be addressed by the review included, but were not limited to increases or decreases of fixed and/or transient combustibles. However, no specific review was provided to the inspectors which addressed the increase in combustibles resulting from the inclusion of Thermo-lag in FA CC-124-116, as required in Section 3.3 of the FPP, Rev. 15.

In 2003, a re-analysis of cable electrical conductor insulation was performed using the PC-CKS program, which increased the amount of cable insulation present in FA CC-124-117. Using the assigned value of 8,542 BTU/lb for cable insulation, the fire loading for FA-CC-124-117 increased from 37,517 BTU/ sq. ft. to 46,528 BTU/sq. ft. This exceeded the combustible loading limit of 38,000 BTU/sq. ft. specified in the licensee's July 25, 1985, evaluation upon which the NRC based its conclusions in the 1988 SER. The increase in combustible loading resulting from the inclusion of the cable electrical conductor insulation should have been described in the change from Rev. 10, to Rev. 11 of the FHA. Such combustible loading increases were also required to be addressed in accordance with Nuclear Generation Group Standard Procedure REG-NGGC-0010, Rev. 4, entitled "10 CFR 50.59 Reviews," Section 2, where screening question No. 5 asked "Does the proposed activity involve a change to the Fire Protection Program?" However, no record of a 10 CFR 50.59 review of that revision to the FHA had been located at the conclusion of this inspection. The licensee has initiated NCR 476342 for this condition.

Section 3.3 of FPP, Rev. 21, dated October 21, 2002, required the licensee to review modifications in accordance with Nuclear Engineering and NGGC procedures to assess the impact upon the FHA. Specific considerations to be addressed by the review included, but were not limited to increases or decreases of fixed and/or transient combustibles. Similar to the above example, no specific review was provided to the inspectors which addressed the increase in combustibles resulting from the inclusion of cable electrical conductor insulation in FA CC-124-117, as required in Section 3.3 of FPP, Rev. 21.

In summary, for both examples discussed above, the licensee was not able to produce sufficient analysis to demonstrate if the increase in fire loading was acceptable, and would not produce a fire of sufficient intensity and duration to adversely impact the assumptions under which the NRC granted a deviation from the Appendix R, Section IIIG.2.a, requirements for a three-hour barrier for the ceiling assembly of FA CC-124-116, and CC-124-117.

Analysis: The inspectors determined that the failure to adequately evaluate modifications to the approved Fire Protection Plan was a performance deficiency because the licensee was required to comply with the units' Operating License Condition 2.C.(9), and it was within the licensee's ability to foresee and correct. The finding was more than minor because it affected the reactor safety mitigating system cornerstone attribute of protection against external events (i.e. fire). The licensee failed to maintain control of the total amount of in-situ and transient combustibles within required administrative limits for FA CC-124-116 & 117 as stated in the licensee's evaluation. Using IMC 0609, Appendix F, "Fire Protection Significance Determination Process," Attachment 1, "Phase 1 Worksheets," the inspectors assigned a finding category of Fire Prevention and Administrative Controls. The finding was assigned a "low" degradation

rating that reflected the severity of the observed deficiency. For both examples, the selection of a “low” degradation rating is supported by the Phase 1 screening criteria provided in IMC 0609, Appendix F, “Fire Protection Significance Determination Process”, as well as IMC 0609, Appendix F, Attachment 2 “Degradation Rating Guide Specific to Various Fire Protection Elements.” Based on the above criteria, this finding is screened as having low safety significance (Green) in Phase 1 of the Significance Determination Process. The performance deficiency did not increase the likelihood of a fire or the ability of the fire brigade to promptly extinguish the fire in either fire area.

In FA CC-124-116, the type of material introduced as an in-situ combustible has an ignition temperature of 1000°F, making it highly unlikely to ignite from existing sources of heat or electricity. Although the fuel loading was increased from 33,774 BTU/sq. ft. to 50,376 BTU/sq. ft. the total amount of combustibles introduced was still relatively small (increased from 4.1 – 6.2 lbs/sq.ft.). Examples provided in IMC 0609, Appendix F, for a “high” degradation classification associated with the combustible controls program include the introduction of low flashpoint combustible liquids and self igniting materials. The Thermo-lag material which was responsible for the increase in fuel loading does not have these combustible properties.

In FA CC-124-117, the thermo-set cable insulation material introduced as an in-situ combustible was a solid material with an ignition temperature in excess of 600°F, making it difficult to ignite from existing sources of heat or electricity. Fire involving cables within the horizontal runs of cable tray would be slow burning. Although the fuel loading increased from 37,512 BTU/sq. ft. to 46,542 BTU/sq. ft., the total amount of combustibles introduced was still relatively small (increased from 4.7 – 5.8 lbs/sq. ft.). Examples provided in IMC 0609, Appendix F, for a “high” degradation classification associated with the combustibles control program include the introduction of low flashpoint combustible liquids and self igniting materials. The thermo-set cable insulation type material which was responsible for the increase in fuel loading did not have these combustible properties.

The performance deficiency was not assigned a cross cutting aspect as this deficiency occurred over three years ago, and is therefore not reflective of current plant performance.

Enforcement: Crystal River Unit No. 3 Operating License Condition 2.C.(9), requires that the licensee implement and maintain in effect all provisions of the approved FPP as described in the FSAR. FSAR section 9.8.4, states that administrative controls covering the design, maintenance, and modification processes for CR3’s FPP are provided by the Fire Protection Plan. Section 3.3, of the Fire Protection Plan, “Impact of Engineering Changes on Fire Protection” requires that CR3 modifications be reviewed to assess the impact upon the FHA through Regulatory Reviews and 10CFR50.59 screenings. Specific considerations addressed by the review include an increase or decrease of fixed and/or transient combustibles. Modifications are to be reviewed in accordance with procedures to determine their impact on the ability to achieve and maintain safe shutdown in accordance with CR3 commitments. Further evaluation is required if the modification occurs in a fire area containing redundant safe shutdown equipment to assure compliance with Appendix R.

Contrary to the above, on April 26, 2011, the TFPI inspectors identified two examples where the licensee failed to implement all provisions of the approved FPP as described in the FSAR. Specifically, in 1999, and 2003, the licensee revised their FPP to increase the combustible loading beyond the maximum permissible limits for FA CC-124-116, 480V ES Switchgear Bus Room 3B and FA CC-124-117, 480V ES Switchgear Bus Room 3A, respectively without performing an evaluation to ensure compliance with the approved FPP. In 1999, the licensee modified their current FPP to allow the inclusion of Thermo-lag fire barrier materials as a combustible material, which increased the combustible loading for FA CC-124-116 beyond the maximum permissible limit. Additionally, in 2003, the licensee performed EC 52155, which documented a re-analysis of the quantity of combustible cable insulation for FA CC-124-117, which also increased the combustible loading for that fire area beyond the maximum permissible limit. The inspectors determined that the above changes impacted the approved FPP and warranted further documented evaluation prior to implementation to assure compliance with the CR3 approved FPP. Because this violation was of very low safety significance, Green, and has been entered into the licensee's corrective action program as NCRs 461209 and 476342, this finding is being treated as a non-cited violation consistent with Section 2.3.2, of the NRC Enforcement policy and is identified as NCV 05000302/2011008-01, Failure to Adequately Evaluate Changes to the Approved FPP.

(2) Inadequate Fire Response Procedure OP-880B

Introduction: The inspectors identified a Green NCV of Crystal River Unit 3 Technical Specification (TS) 5.6.1.1.a., for inadequate guidance in procedure OP-880B, Appendix "R" Turbine Building Post-Fire Safe Shutdown Information. Specifically, the procedure could not have been performed as written because it did not identify the appropriate equipment that was to be manipulated to ensure that the reactor coolant pumps (RCPs) remained de-energized after being secured in the event of a fire in turbine building FZs TB-95-400A, TB-119-400E, or TB-145-400F. Additionally, procedure OP-880B did not provide adequate guidance regarding how CR3 operators would communicate with Crystal River Unit 1/Unit 2 (CR1/CR2) operators and did not specify if a reliable means of communications was available. The licensee initiated NCRs 460602, and 461736 to address this issue.

Description: Procedure OP-880B would have been used to safely shut down CR3 from the main control room (MCR) in the event of a fire in turbine building FZs TB-95-400A, TB-119-400E, or TB-145-400F. The inspectors walked down procedure OP-880B, with licensee operations personnel to assess the procedural guidance for post-fire SSD. During review and walk down of procedure OP-880B, the inspectors noted that Enclosure 3, Step 3-1 could not be performed as written due to inadequate procedural guidance. This step directed the CR3 operators to contact the non-nuclear CR1/CR2 control room (located in a separate area), and request the CR1/CR2 operators to de-energize CR3 Start-up and Engineered Safeguards Back-up Transformers MTTR-2 and 6 by opening breakers 1691, and 1692 to prevent spurious restart of the CR3 RCPs. The inspectors noted that although the procedure stated "open breaker 1692," there was no switch labeled breaker 1692 located in the CR1/CR2 control room. After hours of reviewing drawings, licensee personnel subsequently identified alternative means for opening breaker 1692 from the CR1/CR2 control room. However, the alternatives were not proceduralized in OP-880B, and the CR1/CR2 operators stated that they were not familiar with the alternatives. The inspectors also noted that CR1/CR2 personnel experienced difficulty locating the switch for breaker 1691 in the CR1/CR2 control room.

The inspectors discussed these observations with CR1/CR2 personnel who acknowledged that their difficulty in locating CR3 switches and controls in the CR1/CR2 control room was due, in part, to a lack of training and familiarity with CR3 fire response procedures and CR3 switches and controls in the CR1/CR2 control room. In addition to the above procedure inadequacy, the inspectors also noted that procedure OP-880B did not provide adequate guidance regarding how CR3 operators would communicate with CR1/CR2 personnel, and did not specify that a reliable means of communications was available. The procedure stated that portable radio communications may be affected due to loss of antenna cables and power supplies to the repeaters. The inspectors questioned if the telephone system could be credited and licensee personnel stated that the telephone system could not be relied upon because cable routing for the telephone system had not been verified to be available in the event of a turbine building fire.

Based on the above observations, the inspectors concluded that the guidance in procedure OP-880B was not adequate to ensure that the CR1/CR2 operators would have been successful in completing Enclosure 3, Step 3-1. The inspectors also noted weaknesses in the licensee's verification and validation process for OP-880B, and the interface process for CR3 and CR1/CR2 personnel with regard to training of CR1/CR2 personnel on CR3 fire response procedures (including switches/controls for CR3 equipment located in the CR1/CR2 control room). The licensee initiated NCRs 460602 and 461736 to address this issue in the corrective action program. Additionally, licensee personnel stated that procedure OP-880B was issued in April 2010. During the time from April 16, 2010, to April 22, 2011, CR3 has been in cold shut down and procedure OP-880B would not have been required.

Analysis: The inspectors determined that inadequate SSD procedure guidance was a performance deficiency. This finding was more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and it affected the cornerstone objective of protection against external events (i.e., fire). The inspectors assessed this finding using IMC 0609, Appendix F, Fire Protection Significance Determination Process. The inspectors determined that this finding was of very low safety significance (Green) because during the time that procedure OP-880B was issued and in effect (April 16, 2010, to April 22, 2011), CR3 was in cold shutdown and procedure OP-880B was not applicable. The cause of this finding was determined to have a cross-cutting aspect in the Human Performance Area, Work Control Component, because the licensee did not address the need for CR3 work groups to maintain interfaces with offsite organizations (i.e., CR1/CR2), to communicate and coordinate with each other during activities in which interdepartmental coordination was necessary to ensure plant and human performance.

Enforcement: Technical Specification 5.6.1.1.a. requires that written procedures shall be established, implemented, and maintained covering the activities recommended in Appendix A, of Regulatory Guide 1.33, Rev. 2, dated February 1978. Regulatory Guide 1.33, Appendix A, Section 6.v., requires procedures for combating emergencies such as plant fires. Procedure OP-880B, Appendix "R" Turbine Building Post-Fire Safe Shutdown Information, Rev. 0, provided instructions to safely shut down CR3 in the event of a fire in turbine building FZs TB-95-400A, TB-119-400E, or TB-145-400F.

Contrary to the above, on April 22, 2011, the inspectors identified that the licensee failed to meet the requirements of TS 5.6.1.1.a., in that, an inadequate fire response procedure was implemented for a fire in certain turbine building fire zones. Specifically, procedure

OP-880B, Enclosure 3, Step 3-1, could not have been performed as written. This step directed the CR3 operators to contact the non-nuclear CR1/CR2 control room (located outside the CR3 protected area), and request the CR1/CR2 operators to de-energize MTTR-2/6 by opening breakers 1691, and 1692 to prevent spurious restart of the CR3 RCPs. Although the procedure stated "open breaker 1692," there was no switch labeled breaker 1692 located in the CR1/CR2 control room. Additionally, procedure OP-880B did not provide adequate guidance as to how CR3 operators would communicate with CR1/CR2 operators and did not specify if a reliable means of communications was available. Procedure OP-880B has existed since April 16, 2010. The licensee initiated NCRs 460602, and 461736 to address this issue in the corrective action program. Because this finding is of very low safety significance, (Green), and was entered into the licensee's corrective action program, this finding is being treated as an NCV, consistent with Section 2.3.2, of the NRC Enforcement Policy. This finding is identified as NCV 05000302/2011008-02, Inadequate Procedure OP-880B, for Turbine Building Post-Fire Safe Shutdown.

.02 Passive Fire Protection

a. Inspection Scope

For the selected FAs, the inspectors evaluated the adequacy of fire barrier walls, ceilings, floors, mechanical and electrical penetrations, fire doors, fire dampers and ERFBS. The inspectors walked down accessible portions of the selected fire areas to observe material condition of the fire barriers. The inspectors reviewed the design of selected ERFBS to confirm that appropriate materials and construction methods were used to assure that the respective fire barriers met their intended design function. The inspectors reviewed the FPDS for selected and adjoining fire areas to verify that the plant fire loading used by the licensee was appropriate for the stated fire resistance rating of the enclosures. The inspectors reviewed recently completed surveillance procedures for fire doors, penetration seals and ERFBS.

b. Findings

No findings were identified

.03 Active Fire Protection

a. Inspection Scope

For the selected FAs, the inspectors performed in-plant observations of the material condition and operational line-up of fire detection, fire protection water supply, automatic wet pipe sprinkler systems and manual fire hose and standpipe systems. The inspectors evaluated if the fire detection and suppression methods were appropriate for the hazards in the selected fire areas. The inspectors compared the fire detection and fire suppression systems to the applicable National Fire Protection Association (NFPA) Standard(s) for the selected FAs by reviewing the design documents and observing their as-installed configurations as part of performing the in-plant walkdowns. The inspectors compared the testing and maintenance program for the fire detection and suppression systems to the testing and maintenance requirements of the Crystal River Unit 3 Fire Protection Plan. The inspectors reviewed recently completed surveillance procedures

(SPs) for Functional Testing of Fire Detection Systems (SP 190D), and Fire Service Sprinkler and Fixed Spray Systems for the Control Complex (SP 411E).

For the selected FAs of the Control Complex the inspectors compared the fire fighting pre-plan strategies to existing plant layout and equipment configurations and the fire response procedures. The inspectors assessed the condition of firefighting and smoke removal equipment by inspecting the equipment located in the fire brigade equipment staging and storage areas. The inspectors reviewed fire brigade drill planning and evaluation report records for drills performed in FA CC-124-116, and CC-124-117 performed in 2010. Review of specific attributes of fire brigade conduct for these drills included strategy and tactics, command and control, use of fire brigade equipment, and time-lines for alarm, assembly and first mitigating events (i.e. Suppression).

b. Findings

No findings were identified.

.04 Protection From Damage From Fire Suppression Activities

a. Inspection Scope

The inspectors evaluated whether the installed automatic wet pipe sprinkler systems or manual fire fighting activities could adversely affect equipment credited for SSD, inhibit access to alternate shutdown equipment or adversely affect local operator actions required for SSD for the selected fire areas. The inspectors considered the consequences of a rupture, inadvertent operation or actual operation of a fire suppression system concurrent with manual fire fighting activities as could result from a fully involved fire in one of the selected fire areas. The inspectors reviewed Crystal River Unit 3 Operating Experience reviews for NRC Information Notice Nos. IN 98-31, "Fire Protection System Design Deficiencies and Common Mode Flooding of Emergency Core Cooling Rooms at Washington Nuclear Project Unit 2," IN 2003-08, "Potential Flooding through Unsealed Concrete Floor Cracks" and IN 2005-30, "Safe Shutdown Potentially Challenged by Unanalyzed Internal Flooding Events and Inadequate Design." The inspectors reviewed pre-fire plans which address the opening of doors to drain water or ventilate smoke so that OMAs may be performed. The inspectors reviewed completed SPs for Penetration Seals (SP 407), and Condition Monitoring of Structures (EGR-NGGC-0351) to address potential damage from water leaking through floor slabs to equipment below. The inspectors measured curb heights above the floor for installed equipment and checked floor slope to determine if water could inadvertently pool in such a manner as to adversely affect SSD equipment or local operator actions.

b. Findings

No findings were identified.

.05 Alternative Shutdown Capability

a. Inspection Scope

For a postulated fire in the cable spreading room or main control room, the licensee credits alternate shutdown capability to achieve hot and cold shutdown which requires transferring plant controls from the main control room to the remote shutdown panel. The inspectors reviewed records of the most recently completed functional tests of the Appendix R transfer switches, relays and remote shutdown panel. The testing was performed by periodic test procedure PT-315, "Remote Shutdown Panel Relay Operability," and completed on January 14, and 21, 2011. The tests objectives were to demonstrate the capability to transfer plant controls from the main control room to the remote shutdown panel. The inspectors reviewed the records to verify that testing was performed satisfactorily and that test deficiencies were properly entered and corrected by the corrective action program. The inspectors reviewed the short-circuit coordination for fuses in the 125 volt direct current (dc) control power circuit to makeup pump MUP-1C to verify that the 125 volt dc power would not be lost due to fire damage prior to or subsequent to transferring the pump controls from the main control room to the remote shutdown panel. The inspectors also reviewed electrical elementary diagrams outlining the design of the remote shutdown panel actuation relays to verify that the system would function to electrically isolate the remote shutdown panel from the main control room, and that testing adequately demonstrated operability of the system. The inspectors reviewed selected job performance measures for licensed and non-licensed operators to verify that the training reinforced the shutdown methodology in the SSD analysis and abnormal procedures for the applicable FAs.

b. Findings

No findings were identified.

.06 Circuit Analyses

a. Inspection Scope

This area of inspection is suspended for plants in transition, because a more detailed review of cable routing and circuit analysis will be conducted as part of the FPP transition to NFPA 805. However, to support this inspection, a limited scope review of a select sample of SSD components was conducted to evaluate if the existing post fire safe shutdown procedures were adequate for a postulated fire in any of the selected FAs. The cables examined were based upon a list of SSD components selected by the inspectors after a review of the following documents: AP-880, "Fire Protection;" OP-880A, "Appendix "R" Control Complex Post-Fire Safe Shutdown Information;" OP-880B, "Appendix "R" Turbine Building Post-Fire Safe Shutdown;" FHA; 10 CFR 50 Appendix R Fire Study; and the SSD Analysis flow diagrams. The inspectors reviewed the cable routing and potential for fire damage and the effects on the circuit. The results of this review were compared with the licensee's Elementary/Schematic/Circuit/208-Drawing Analysis, 10 CFR 50 Appendix R Fire Study, and the operations post-fire safe shutdown procedures. The specific components reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.07 Communications

a. Inspection Scope

The inspectors reviewed plant communication capabilities to evaluate the availability of the communication systems to support plant personnel in the performance of local OMAs to achieve and maintain SSD conditions. The inspectors also reviewed the communication systems available at different locations within the plant that would be relied upon to support fire event notification, and fire brigade fire fighting activities to evaluate their availability at different locations. During this review, the inspectors considered the effects of ambient noise levels, clarity of reception, reliability and coverage patterns. In addition, the inspectors reviewed radio battery ratings, the electrical power supplies, and cable routing for the communication systems to evaluate if the plant telephones and portable radios would be available to support the operators in the conduct and coordination of their required duties during a fire.

b. Findings

No findings were identified.

.08 Emergency Lighting

a. Inspection Scope

The inspectors performed plant walk down inspections with licensee staff of the post-fire safe shutdown procedures for the selected fire areas to observe if the placement and coverage area of fixed 8-hour battery pack emergency lights provided reasonable assurance of illuminating access and egress pathways and any equipment requiring local operation and/or instrumentation monitoring for post fire safe shutdown.

The inspectors reviewed maintenance and design aspects of the fixed emergency lighting units to verify that the battery power supplies were rated with at least an 8-hour capacity as required by the Fire Protection Plan. Preventive maintenance and surveillance testing records were reviewed to ensure adequate surveillance testing and periodic battery replacements were in place to ensure continued reliable operation of the fixed emergency lights. A list of documents reviewed is included in the Attachment.

b. Findings

No findings were identified.

.09 Cold Shutdown Repairs

a. Inspection Scope

The licensee's post-fire shutdown procedures, credits completion of OMAs and equipment repairs, prior to achieving a cold shutdown condition for certain fire areas. Thus, cold shutdown repair procedures and repair kits were reviewed during this inspection. The inspectors reviewed the cold shutdown repair procedure MP-192, "Post Fire Repair of Decay Heat Closed Cycle Cooling Pump Motors, Decay Heat Service Seawater Pump and Power Cables," and physically walked down the proposed routing for any repairs or temporary installation of power cables to verify that the work could be performed as described in the repair procedures, and to determine if adequate cable and materials were being stored on site as required. The inspectors examined the repair parts and tools in the Appendix R Repair Kit located in the warehouse storage areas to verify that the material was being stored on site and was in good material condition. The inspectors verified that special cable termination tools and test equipment specified by the repair procedures were readily available and stored on site in the instrument calibration shop. The inspectors reviewed the inventory surveillance records of the Appendix R Repair Kit to verify that the repair equipment and materials were routinely inspected, inventoried, and replaced when necessary by the licensee in accordance with the approved FPP. The specific documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.10 Compensatory Measures

a. Inspection Scope

For the selected FAs, the inspectors reviewed the administrative controls for out-of service, degraded and or inoperable fire protection features such as detection and suppression systems, and passive fire barriers. The inspectors reviewed Breach Management System databases containing open and closed fire breach reports since 2008, and compared them to the FAs selected for the inspection. Fire detection and suppression system impairments were reviewed against operability requirements and compensatory measures outlined in the Crystal River Unit 3 FPP. Inspectors reviewed this information to determine if the risk associated with removing the fire protection feature from service was adequately addressed with appropriate compensatory measures. Key Performance Indicators tracking unplanned Fire Protection Action Statement Entries were reviewed for such items as system malfunction, failure, inadvertent actuation, out of specification operating parameters and surveillance test failures. Entry and closure dates of impaired fire protection items tracked were assessed to determine if restoration to normal operating mode was being done in a timely manner and met the overall objectives of control and compensatory measures outlined in Crystal River Unit 3 FPP Section 6.0.

b. Findings

No findings were identified.

.11 B.5.b Inspection Activities

a. Inspection Scope

The inspectors reviewed, on a sampling basis, the licensee's external spent fuel pool mitigation measures for large fires and explosions to verify that the measures were feasible, personnel were trained to implement the strategies, and equipment was properly staged and maintained. The inspectors requested and reviewed inventory and maintenance records of required equipment. Through discussions with plant staff, review of documentation, and plant walk-downs, the inspectors verified the engineering basis to establish reasonable assurance that the makeup capacity could be provided using the specified equipment and water sources. The inspectors reviewed the licensee's capability to provide a reliable and available water source, and the ability to provide the minimum fuel supply. By review of records and physical inspection, the inspectors verified that B.5.b equipment was being properly stored, maintained, and tested in accordance with the licensee's B.5.b program procedures. The inspectors performed a walk-down of the storage and staging areas for the B.5.b equipment to verify that equipment identified for use in the current procedures were available, calibrated and maintained. In the presence of licensee staff, the inspectors conducted an independent audit and inventory of required equipment and a visual inspection of the dedicated credited power and water source. The inspectors reviewed training and qualification requirements for operators, fire brigade, emergency response organization, and new employees for the implementation of actions needed to mitigate a B.5.b related event. The inspectors reviewed training records of the licensee's staff to verify that operator training/familiarity with the strategy objectives and implementing guidelines were accomplished according to the established training procedures.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed recent independent licensee audits for thoroughness, completeness and conformance to requirements. Guidance and/or requirement for performing independent audits are contained in Generic Letter 82-21, "Technical Specifications for Fire Protection Audits" and the licensee's Quality Assurance Manual, as well as Appendix A, to Branch Technical Position APCS 9.5-1 "Guidelines for Fire Protection for Nuclear Power Plants," Section C.10, "Audits." The inspectors reviewed other corrective action program (CAP) documents, including completed corrective actions documented in selected NCRs to verify that industry-identified fire protection problems potentially or actually affecting the plant were appropriately entered into, and resolved by, the CAP process. A number of NCRs were reviewed with regard to the attributes of timeliness, apparent cause determination to ensure that proposed corrective actions addressed the apparent cause, reportability and operability determination, etc. The NCRs reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA5 Other Activities

.1 (Closed) Unresolved Item (URI) 05000302/2004009-05, Motor Operated Valves Not Protected From Hot Shorts That Could Bypass Torque Switches

a. Inspection Scope

This URI was identified because the licensee's Fire Study for post-fire safe shutdown (SSD) did not consider the possibility that a fire in a motor control center (MCC), which powers motor operated valves (MOVs), could produce fire induced hot shorts that could spuriously energize the valve operator and bypass the MOV torque and limit switches resulting in subsequent valve damage. The NRC had a concern that such an occurrence could potentially defeat the post-fire SSD strategy. In response to NRC questions, the licensee initiated Nuclear Condition Report (NCR) 148225, to further evaluate whether such vulnerability actually existed. The inspectors reviewed the facts of the subject URI as well as those evaluations and corrective actions taken or planned by the licensee. The specific documents reviewed are listed in the Attachment.

b. Findings

Introduction: A noncompliance of 10 CFR 50, Appendix R, Section III.G, "Fire Protection of Safe Shutdown Capability," was identified for failure to ensure that one train of systems necessary to achieve and maintain hot shutdown conditions was free of fire damage. Specifically, the licensee's Fire Study was incomplete in that it did not consider that fires in MCCs that power MOVs, could produce a fire induced short circuit that would energize the MOV with the torque and limit switch contacts bypassed resulting in the valve being damaged. This action could defeat the post-fire SSD strategy where the licensee had credited a local OMA to reposition the valve. Since this noncompliance is not a finding of great significance (i.e. less than Red), it meets the criteria of NRC Enforcement Policy, "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)" for enforcement discretion.

Description: During the 2005 TFPI, the inspectors noted that fires could occur at MCCs, and if such a fire caused a hot short that spuriously actuated a MOV that was needed for post-fire SSD and also bypassed the torque and limit switches, the valve could be rendered inoperable. The inspectors also noted that a single SSD train may have both "A" train and "B" train MOVs in the flow path. Examples included the makeup pump minimum-flow valves. These two MOVs were installed in series in the combined minimum-flow line for all three makeup pumps. One was powered from the A train and one from the B train of the electrical system. If either one of these valves were to become damaged in the closed position all minimum-flow for all makeup pumps would be lost. However, the licensee's Appendix R Fire Study relied on having makeup pump minimum-flow available for post-fire SSD. Another example would be the decay heat drop line, which similarly included two MOVs in series. In response to NRC questions about this potential vulnerability that could affect post-fire SSD, the licensee initiated Nuclear Condition Report (NCR) 148225, to further evaluate whether such vulnerability

actually existed. The inspectors reviewed the licensee's evaluation of the problem documented in the NCR and concluded that several valves would be subject to failure if the torque and limit switches were bypassed. This affected the licensee's post-fire SSD strategy for fires in fire areas in the auxiliary building on elevations 95 foot and 119 foot (i.e., FAs AB-95 and AB-119), for which they had credited OMAs to reposition valves whose MCCs were located in the fire area without assessing equipment pre-condition for performing manual actions of valves. There are approximately 16 valves of concern involving 9 MCCs that could be damaged if the torque or limit switches were bypassed and subsequently prevented the valve from being manually operated. The licensee's proposed corrective actions include evaluating modifications for specific valves to replace the valve and electrical components to allow an OMA to be performed to operate the valves as required. The licensee also indicated that this issue will be further analyzed as part of the NFPA 805 transition project to determine if the OMAs will still be required.

Analysis: The failure to ensure that one train of systems necessary to achieve and maintain hot shutdown conditions was free of fire damage as required by 10 CFR Part 50, Appendix R, Section III.G is a performance deficiency. The noncompliance is considered to be more than minor because it is associated with the protection against external factors attribute (i.e. fire) and it degraded the reactor safety Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent consequences. The risk significance of the finding was determined utilizing the guidance of IMC 0609, Appendix F, Fire Protection Significance Determination Process. Pursuant to IMC 0609, Appendix F, the finding category was "Post-fire Safe Shutdown". The finding was assigned a high degradation rating because the Post-fire SSD analysis was incomplete with regard to analyzing the effects of fires in MCCs and the potential impacts on MOVs. Because the finding was assigned a high degradation rating it did not screen in Phase 1 requiring a Phase 2 analysis. The MCCs affected by this finding were located in the auxiliary building in fire zones AB-95-3B, AB-95-3C, AB-95-3G and AB-119-6E, AB-119-6J, AB-119-6Q on elevations 95 and 119, respectively. All but one of the fire zones have fixed suppression, all have detection. The fire zone that does not have fixed automatic suppression is FZ AB-119-6Q. However, the valve fed from the MCC located in the zone is only required for cold shutdown which would screen to Green in Phase 1 of the SDP. For fires external to the MCCs there is a high likelihood that the fires will be detected and suppressed prior to damaging the components inside the MCC cabinet. For fires that start internal to the MCC cabinets it is more likely that damage will occur before the fire can be suppressed so no credit is given for manual or automatic suppression. However, independent of other factors, including fire suppression credit, the frequency of fires in electrical cabinets coupled with the probability of spurious operation is of sufficiently low likelihood that it is concluded that this finding is not associated with a finding of high safety significance (i.e. red). The inspectors determined the performance deficiency does not have a cross-cutting aspect because it does not represent current licensee performance since the analysis was completed prior to 2000.

Enforcement: 10 CFR 50.48 (b)(1) requires, in part, that all nuclear power plants licensed to operate prior to January 1, 1979, must satisfy the applicable requirements of 10 CFR Part 50, Appendix R, Section III.G. Section III.G.1.a requires one train of systems necessary to achieve and maintain hot shutdown conditions to be free of fire damage.

Contrary to the above, on January 28, 2005, the TFPI inspectors identified that the licensee's Fire Study was incomplete in that it did not consider that fires in MCCs that power MOVs could produce a fire induced short circuit that would energize the MOV with the torque and limit switch contacts bypassed resulting in the valve being damaged. Such action could defeat the post-fire SSD strategy where the licensee had credited a local OMA to reposition the valve. This problem dates back to the licensee's original analysis for NRC Information Notice 92-18 which occurred prior to 2000. The licensee initiated NCR 148225, to evaluate this issue and to implement corrective actions. The licensee also required roving fire watches in the areas anytime the plant is in modes 1, 2, and 3 until the issue is resolved.

Because the licensee committed, prior to December 31, 2005, to adopt NFPA 805 and change their fire protection licensing bases to comply with 10 CFR 50.48(c), the NRC is exercising enforcement and reactor oversight process (ROP) discretion for this issue in accordance with the NRC Enforcement Policy, "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)." Specifically, it was likely this issue would have been identified and addressed during the licensee's transition to NFPA 805, it was entered into the licensee's corrective action program and immediate compensatory measures were taken, it was not willful, and was not associated with a finding of high safety significance (i.e. less than Red).

The unresolved item is now closed.

4OA6 Meetings, Including Exit

On April 26, 2011, via telephone conference call, the lead inspector presented the preliminary inspection results to Mr. J. Franke, Site Vice President, and other licensee staff members. The licensee acknowledged the results. The lead inspector informed the licensee that proprietary information would not be included in this inspection report, although none was identified. On June 6, 2011, the lead inspector provided updated inspection results, by telephone, to Tim Howard and other members of the licensee's staff. On July 14, 2011, the lead inspector conducted a final exit meeting with Jeff Swartz, Director of Site Operations and other members of the licensee's staff.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

S. Cahill, Director - Engineering Nuclear
J. Curham, Lead Engineer, Equipment Performance/Engineering Programs
T. Doruff, Nuclear Operations Specialist
V. D'Souza, Senior Engineer, Nuclear Engineering
J. Ertman, Supervisor – Fleet Fire Protection, Nuclear Engineering
J. Franke, Vice President, Crystal River Unit 3 Nuclear Plant
D. Herrin, Senior Engineer, Regulatory Compliance
T. Hobbs, Acting Plant Manager
A. Holder, Senior Engineer, Nuclear Engineering
T. Howard, Supervisor, Equipment Performance/Engineering Programs
C. Kish, Lead Engineer, Equipment Performance/Engineering Programs
R. Oates, Senior Nuclear Operations Specialist
B. Rhodes, Lead Engineer, Nuclear Engineering
S. Shear, Nuclear Operations Training Instructor
J. Swartz, Director of Site Operations
K. Williams, Senior Engineer, Systems Engineering

NRC personnel

N. Childs, Resident Inspector, CR3
T. Morrissey, Senior Resident Inspector, CR3
R. Reyes, Resident Inspector, CR3
R. Nease, Chief, Engineering Branch 2, Division of Reactor Safety, Region II

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

05000302/2011008-01	NCV	Failure to Maintain Fire Loading Within Allowable Limits (Section 1R05.01.b.(1)).
05000302/2011008-02	NCV	Inadequate Procedure OP-880B for Turbine Building Post-Fire Safe Shutdown (Section 1R05.01.b.(2)).

Closed

05000302/2004009-005	URI	Motor Operated Valves Not Protected From Hot Shorts that Could Bypass Torque Switches (Section 4OA5).
----------------------	-----	---

LIST OF COMPONENTS REVIEWED
(Refer to Report Section 1R05.01 / 1R05.05 / 1R05.06 – Circuit Analyses)

<u>Component Identification</u>	<u>Description</u>
<u>Valves</u>	
ASV-5	EFP-2 Inlet Isolation
MSV-55	MN STM to FWP & TURB BP, SG A
MSV-56	B-OTSG to EFP-2
MSV-411	MS Line A-2 Isolation
MSV-412	MS Line A-1 Isolation
MSV-413	MS Line B-1 Isolation
MSV-414	MS Line B-2 Isolation
MUV-25	HPI Control to Rx Inlet Lines Loop B
MUV-26	HPI Control to Rx Inlet Lines Loop B
MUV-49	MUHE-1A & MUHE-1B to Block Orifice Isol
MUV-58	DHT-1 to MUP-1A/1B/1C Suction Isol
FWV-14	FWP-2A Suction Isolation
FWV-15	FWP-2B Suction Isolation
FWV-29	Main FW Block to RCSG-1B
FWV-30	Main FW Block to RCSG-1A
EFV-11	EFP-2 to RCSG-1A Isolation
EFV-32	EFP-2 to RCSG-1B Isolation
RCV-10	PZR RCT-1 PWR Act Rel to RC Drn Tnk
RCV-11	PZR RCT-1 Isolation to RCV-10
MSV-411-SV1; SOV	MSV-411 Actuating Air Isolation
MSV-411-SV2; SOV	MSV-411 Actuating Air Isolation
MSV-412-SV1; SOV	MSV-412 Actuating Air Isolation
MSV-412-SV2; SOV	MSV-412 Actuating Air Isolation
MSV-413-SV1; SOV	MSV-413 Actuating Air Isolation
MSV-413-SV2; SOV	MSV-413 Actuating Air Isolation
MSV-414-SV1; SOV	MSV-414 Actuating Air Isolation
MSV-414-SV2; SOV	MSV-414 Actuating Air Isolation
<u>Pump Motors</u>	
MUP-1C	Makeup & Purification Pump
RCP-1A	Reactor Coolant Pump 1A
RCP-1B	Reactor Coolant Pump 1B
RCP-1C	Reactor Coolant Pump 1C
RCP-1D	Reactor Coolant Pump 1D
<u>Emergency Diesel Generators</u>	
EGDG-1A	Emergency Diesel Generator 1A
EGDG-1B	Emergency Diesel Generator 1B

Switchgear Breakers

MTSW-2F-3B1	Breaker 3206 Feed From Unit 3 Backup ES XFMR
MTSW-2D-3A12	Breaker 3209 Feed From EGDG-1A
MTSW-2F-3B3	Breaker 3210 Feed From EGDG-1B
MTSW-2C-3A2	Breaker 3211 Feed From Offsite Pwr XFMR
BKR-1691-MHSG	230KV, Circuit Breaker
BKR-1692-MHSG	230KV, Circuit Breaker
EP1132	4900, 230KV, Circuit Breaker
EP1030	4902, 230KV, Circuit Breaker

LIST OF DOCUMENTS REVIEWED

Procedures

MP-192, Post Fire Repair of Decay Heat Closed Cycle Cooling Pump Motors, Decay Heat Pump 1B, Decay Heat Service Seawater Pump and Power Cables, Rev. 10

PT-315, Remote Shutdown Panel Relay Operability, Rev. 13

SP-807, Mounted Emergency Battery-Powered Light Units, Rev. 29

AI-511, Operations Department Work Control Center, Rev. 4

AI-0604, Administrative Control of Structures, Material and Equipment Laydown Areas, Rev. 16

AI-2200, Guidelines for Handling, Use and Control of Transient Combustibles, Rev. 13

AI-2205, Administration of CR3 Fire Brigade Organization & Duties of the Fire Brigade, Rev. 25

AI-2205A, Pre Fire Plan - Control Complex, Rev. 5

AI-2205B, Pre Fire Plan - Turbine Building, Rev. 8

AI-2210, Fire Watch Program, Rev. 12

AI-2215, Management of the CR3 Fire Protection Plan, Rev. 3

AP-880, Fire Protection, Rev. 28

AP-990, Shutdown from Outside the Control Room, Rev. 28

AP-1040, Aux Building Flooding, Rev. 1

AP-1050, Turbine Building Flood, Rev. 10

CP-0137, Fire Barrier Breaches, Rev. 21

EGR-NGGC-0351, Condition Monitoring of Structures, Rev. 15

EM 0216, Duties of the Fire Brigade, Rev. 25

EOP-02, Vital System Status Verification, Rev. 12

FIR-NGGC-0003, Hot Work Permit, Rev. 4

FIR-NGGC-0004, Determination of Combustible Fire Loading & Equivalent Fire Severity, Rev. 2

MP-0805, Sealing of Penetrations, Rev. 14

MP-0808, Installation of Mecatiss Fire Barriers, Rev. 5

NGGM-IA-0034, Crystal River Fossil and Crystal River Nuclear Support Interface Agreement, Rev. 0

OP-880A, Appendix "R" Control Complex Post-Fire Safe Shutdown Information, Rev. 14

OP-880B, Appendix "R" Turbine Building Post-Fire Safe Shutdown Information, Rev. 0

PT-911, PPIP-1 Performance Test, Rev. 7

SP-190D, Functional Test of Fire Detection Systems – Control Complex, Rev. 20

SP-404A, Control Complex, Auxiliary and Intermediate Buildings Fire Service Sprinkler System Functional Check, Rev. 17

SP-404B, Control Complex, Auxiliary and Intermediate Buildings Fire Service Sprinkler Alarm Circuitry Check, Rev. 13

SP 404C, Control Complex, Auxiliary and Intermediate Buildings Fire Service Sprinkler System

Mechanical Check, Rev. 7
 SP-407, Fire Barrier Penetration Seals, Rev. 36
 SP-411E, Fire Service Sprinkler and Fixed Water Spray Systems Control Complex
 SP-805, Monthly Surveillance of Plant Fire Doors, Rev. 35
 SP-820, Mecatiss Fire Barrier Inspection, Rev. 6
 EM-202, Duties of the Emergency Coordinator, Rev. 90
 AAG-05, Contingencies for Loss of Spent Fuel Pool Level, Rev. 5
 AAG-09, Operation of the Portable Power Independent Pump and Support Equipment, Rev. 2

Calculations, Analyses and Evaluations

Fire Hazard Analysis, Rev. 12
 10 CFR 50 Appendix R Fire Study, Rev. 14
 Calculation E-90-0102, Rev. 3, Attachment 7.6, Contains Vendor Data on Shawmut Form 600
 A2Y/A6Y Fuses
 M03-0014, NFPA 13-1969 Code Compliance Evaluation, Sprinkler Systems, Control Complex
 M03-0015, NFPA 13-1983 Code Compliance Evaluation, Sprinkler Systems, Control Complex
 M04-0002, NFPA 14-1971 Code Compliance Evaluation, Fire Standpipe Systems
 M04-0017, NFPA 80-1970 Code Compliance Evaluation, Fire Doors
 M09-0101, Qualification of Fire Barrier Penetration Seal Design Details
 M-97-0017, NFPA 13 Sprinkler Analysis, Control Complex El. 124'
 EC 65810 Attachment Z02, Progress Energy B.5.b Phase 2 External Portable Pump
 Specification Rev. G, Rev. 3
 Fire Protection Data System (FPDS), FA CC-124-116 and FA CC-124-117, dated 4/20/2011
 Appendix R/Fire Protection Evaluation Attachment No. 1-3, Florida Power to NRC letter
 3F0785-31, dated July 25, 1985 (Done as GL 85-01 evaluation meeting criteria of GL 86-10)
 EC 65810, aft Fathom 5.0 Input, Attachment Z03, Scenario 5, Sh. 33 of 152, Rev. 6

Drawings

213-030, Sheet IS-01, Ignition Source Drawing Auxiliary, Intermediate & Reactor
 Building Elevation 119' – 0", Rev. 1
 213-030, Sheet IS-06, Ignition Source Drawing Auxiliary, Intermediate & Reactor
 Building Basement Floor Elevation 75' – 0" & 95' – 0", Rev. 1
 B-208-082, RS-01, Elementary Diagram Remote Shutdown, PNL A Relay Actuation, Rev. 4
 B-208-082, RS-02, Elementary Diagram Remote Shutdown, PNL A Relay Actuation, Rev. 9
 B-208-082, RS-03, Elementary Diagram Remote Shutdown, PNL A Relay Actuation, Rev. 7
 B-208-082, RS-04, Elementary Diagram Remote Shutdown, PNL A Relay Actuation, Rev. 6
 B-208-082, RS-11, Elementary Diagram Remote Shutdown, PNL A Relay Actuation, Rev. 12
 B-208-041, MU-01, Elementary Diagram Makeup & Purification Pump 3A (MUP-1A) 4160V ES
 Bus 3A, MTSW-2D-3A10, Rev. 16
 B-208-041, MU-33, Elementary Diagram Letdown Cooler Isolation Valve MUV-49 Letdown Cool
 Orifice Shut-off Valve MUV-50, Rev. 22
 B-208-825, Makeup System Pneumatic Diagram Makeup & Purification System Valves Air
 Supply, Rev. 20
 B-208-041, MU-04, Elementary Diagram Makeup & Purification Pump 3C (MUP-1C) 4160V ES
 Bus 3B, MTSW-2F-3B5, Rev. 20
 EC-229-102, D. C. Elementary Breaker Control/Misc Schemes 230 KV, Rev. B
 EC-229-104, Breaker Control 230 KV D. C. Elementary, Rev. B
 S-171-D3, Crystal River Substation General Layout, Rev. 1
 01710101, Three Line Diagram North Central Region OC13 – OPC, Rev. 6A
 E-201-111, Electrical Main Control Board Substation and Station Service Assembly, Rev. 08
 E-201-111, Electrical Main Control Board Substation & Station Service Assembly, Rev. 26

E-201-117, Electrical Main Control Board Plan View Board Assembly, Rev. 15
 EC-206-011, Electrical One Line Diagram Composite, Rev. 70
 EC-206-051, Electrical One Line Diagram 250/125V DC System, Rev. 16
 EC-206-054, Sheet 1, Electrical One-Line Motor Control Center (MCC) E. S. 3A1
 Auxiliary Building – 95' – 0", Rev. 68
 EC-206-055, Electrical One-Line MCC E. S. 3A2 Auxiliary Building 119' – 0", Rev. 44
 EC-206-056, Electrical One-Line MCC E. S. 3B1 Auxiliary Building 119' – 0", Rev. 67
 EC-206-057, Electrical One-Line MCC E. S. 3B2 Auxiliary Building 95' – 0", Rev. 41
 EC-206-058, Electrical One-Line MCC E. S. 3AB Auxiliary Building 119' – 0", Rev. 45
 EC-206-073, Electrical One-Line - MCC MUV-23/24 and MUV-25/26 MUMC-1 and
 MUMC-2, Rev. 8
 EC-206-074, Electrical One-Line MCC E. S. 3A3 Auxiliary Building 119' – 0", Rev. 32
 EC-206-075, Electrical One-Line MCC E. S. 3B3 Auxiliary Building 95' – 0", Rev. 39
 IC-308-825, M.U. Sys Pneumatic Diagram Makeup & Purification System Valves Air Supply,
 Rev. 20
 A-107-013, Architectural Fire Barrier Penetrations Typical Seals, Rev. 6
 E-201-301, Arrangement Electrical Equipment-Control Complex, Rev 45
 E-215-204, Conduit Layout Fire Service Control Complex & Heater Bay, Sh. 001, Rev.32
 FD 302-231, Fire Service Water, Sh. 1, Rev. 91
 FD 302-231, Fire Service Water, Sh. 2, Rev. 59
 FD 302-231, Fire Service Water, Sh. 5, Rev. 83
 L-001-011, Layout Plan Above Turbine Building & Heater Bay Basement Floor El. 95'-0, Rev. 34
 L-001-031, Layout Plan Above Turbine Building & Heater Bay Mezzanine Floor El. 119'-0,
 Rev. 34
 L-001-031, Layout Plan Above Turbine Building and Heater Bay Operating Floor El. 145'-0,
 Rev. 25
 L-001-041, Layout Plan Above Heater Bay Floor El. 164'-0 & 170'-0 and Control Complex
 Elevations 95'-0, 108'-0, 124'-0, 124'-0, 134'-0, 145'-0, 164'-0 & 181'-0, Rev. 35
 P-304-794, FS System Appendix R Modification Fire Service Sprinkler Control Complex 124'-0,
 Rev. 4
 S502-109, Control Complex Removable Floors at Equipment Hatch for Office Space, Rev. 2
 SC-405-042, Control Complex Floor Slab elevation 124'-0, Plans, Sections & Details, Rev.19
 SC-405-063, Control Complex Plan-Floor E. 124'-0 and El 134'-0 and Walls El. 134'-0 to 145'-0
 Penetration Installation and Closure Details, Rev. 15
 49-463 SH-SYS-1, System No. 15 Emergency Diesel Generator Rooms & System No. 17 First
 Floor Control Complex, Sh. 4, Rev 7.
 Industrial Fire and Safety Vendor Drawing Fire Sprinkler Plan Sh.1, Rev. 1

Completed Surveillance Procedures, Test Records, & Work Orders

WO: 016708101, Electrical PM, Appendix R Emergency Repair Tools/Parts/Equipment
 Inventory, Completed March 22, 2011
 WO: 0182793601, EL, SP807; Mounted Emergency Battery Pwr L Units, Completed 1/31/2011
 WO: 0182983501, EL, PM, MEL, 6 Month Battery Inspection/Cleaning and/or Replacement,
 Check/Adjust Voltages, Completed 3/22/2011
 WO: 0129578401, EL, PM, 2 YR Emergency Light Battery Replacement, Completed 3/26/2009
 PT-315, Remote Shutdown Panel Relay Operability, Rev. 13, Completed 1/14 & 1/21/2011
 SP 820, Mecatiss Fire Barrier Inspection WO package 01633656 01, dated 3/30/2011
 Hale Products, Inc. Certificate of Pump Performance Pump Serial Number(s) 07A189 – 07A192,
 Dated 08/03/07
 WO: 01553993 01, Functional Test of Fire Detection Systems, dated 9/29/2010
 WO: 01466844 01, Fire Barrier Penetration Seals, dated 5/05/2010

WO: 01489855 01, Fire Service Sprinkler & Fixed Water Spray Systems for Control Complex,
Dated 12/09/2010

WO: 02889793 01, Monthly Surveillance of Plant Fire Doors, dated 3/21/2011

WO: 01633656 01, Mecatiss Fire Barrier Inspection, dated 3/30/2011

PT-911, PPIP-1 Performance Test, Rev. 7, Completed 03/17/2011

PT-911, PPIP-1 Performance Test, Rev. 7, Completed 02/01/2011

PT-911, PPIP-1 Performance Test, Rev. 7, Completed 02/11/2008

PT-911, PPIP-1 Performance Test, Rev. 7, Completed 10/04/2008

SP-306, Routine Surveillance Log, Rev. 77, Completed 12/17/2010

SP-306, Routine Surveillance Log, Rev. 77, Completed 2/08/2011

SP-306, Routine Surveillance Log, Rev. 77, Completed 3/10/2011

WO-1307777-01, PPIP-1, Portable Powered Independent Pump 2yr Maintenance, Completed
07/14/2009

WO-1307777-02, PPIP-1, Portable Powered Independent Pump 2yr Maintenance, Completed
07/14/2009

WO-1307777-03, PPIP-1, Portable Powered Independent Pump 2yr Maintenance, Completed
07/14/2009

WO-1307777-04, PPIP-1, Portable Powered Independent Pump 2yr Maintenance, Completed
07/14/2009

WO-1415921-01, PPIP-1, Portable Powered Independent Pump, Annual Maintenance,
Completed 7/14/2009

WO-1415921-02, PPIP-1, Portable Powered Independent Pump, Annual Maintenance,
Completed 7/14/2009

WO-1415921-03, PPIP-1, Portable Powered Independent Pump, Annual Maintenance,
Completed 7/14/2009

WO-1415921-04, PPIP-1, Portable Powered Independent Pump, Annual Maintenance,
Completed 7/14/2009

WO-1584307-01, Inventory B.5.B Fire Equipment, Completed, 7/11/2010

WO-1851769-01, PM K-12 Saw Verify Proper Operation, 1/18/2011

WO-1876857-01, PM K-12 Saw Verify Proper Operation, 3/16/2011

Applicable Codes, Specifications, & Standards

NFPA 13-1969 Installation of Sprinkler Systems

NFPA 13-1967 Proprietary Protective Signaling Systems

NFPA 13-1983 Installation of Sprinkler Systems

NFPA 14-1971 Fire Standpipe Systems

NFPA 72-2007 National Fire Alarm Code

NFPA 80-1979 Fire Doors

Technical Manuals & Vendor Information

02556-001, B.5.b Portable Powered Independent Pump Vendor Manual, Rev. 0

Hale Products, Inc. Certificate of Pump Performance, dated 8/03/2007

Audits & Self-Assessments

AR 255208, Perform SA With Regards to B5B Implementation (Quick Hit) – Documents the
Assignments Associated with the Quick Hit Self-Assessment Topic

SA 98-0290, 10 CFR 50.59, Appendix R TDBD

License Basis Documents

10 CFR 50.48, Fire Protection

10 CFR 50, Appendix A, Criterion 3, Fire Protection

10 CFR 50, Appendix R, Section III.G, Fire Protection of Safe Shutdown Capability
 10 CFR 50, Appendix R, Section III.J, Emergency Lighting
 10 CFR 50, Appendix R, Section III.L, Alternative and Dedicated Shutdown Capability
 FSAR, Chapter 8, Electrical Systems
 FSAR, Section 9.8, Plant FPP
 Technical Specification 5.6.1, Procedures
 Regulatory Guide 1.33, Quality Assurance Program Requirements (Operations), Rev. 2
 Fire Hazard Analysis, Rev. 12
 10 CFR 50 Appendix R Fire Study, Rev. 14
 Fire Protection Plan, Rev. 28
 Topical Design Basis Document (TDBD) for Appendix R, Rev. 14
 CR3 Safety Evaluation Reports (SERs), dated July 27, 1979, January 22, 1981, January 6, 1983, July 18, 1985, and March 16, 1988
 Operating License Condition 2.C.(9), Fire Protection
 Operating License Condition 2.C. (14), Mitigation Strategy Licensee Condition
 Letter, NRC to Florida Power Corporation, Exemption Request – Fire Protection Rule Scheduler Requirements of 10 CFR 50.48.(c) – Crystal River Unit No. 3 Nuclear Generating Plant, dated May 04, 1982
 Letter, Florida Power Corporation to NRC, Generic Letter 81-12 on Fire Protection, dated October 29, 1982
 Letter, Florida Power Corporation to NRC, 10 CFR 50, Appendix R Restart Issue Closure and Clarifications of Two NRC Safety Evaluation Reports (SERs) for Sections III.G and III.L, Dated February 17, 1998
 Letter, NRC to Florida Power Corporation, Appendix R to 10 CFR Part 50, dated October 14, 1980

Other Documents

Modification MAR 97-03-02-01, FCN 6, Sheet A of A, Describes installation of Appendix R fuses and fuse holders in 4160 ES Buses and the Remote Shutdown Relay Cabinets
 Fire Drill Planning and Evaluation Report Control Complex 124' 480V ES Switchgear Room "A," Dated 12/08/2010
 Fire Drill Planning and Evaluation Report Control Complex 124' 480V ES Switchgear Room "A," Dated 12/12/2010
 Job Performance Measure (JPM) 34, Plant - Safety Function 4 (Primary) Establish DHR from Outside Control Room, Rev. 0
 JPM-38, Plant - Manually Trip the Reactor, Rev. 0
 JPM-39, Plant - Safety Function 8 Perform Appendix "R" Post-Fire Actions (OP-880A), Rev. 0
 JPM-120, Plant – Place EFP-2 in Standby Using AP-990 Enclosure 4
 Lesson Plan (LP)-OPS-5-31, AP-990 Shutdown Outside Control Room, Rev. 9
 LP-OPS-5-69, AP-880 Fire Protection, Rev. 10
 LP-OPS-5-69A, OP-880A thru OP-880F, Appendix "R" Post-Fire Safe Shutdown Information for The Various Buildings, Rev. 2
 LP-OPS-5-1036, OP-880A, Appendix "R" Post-Fire Safe Shutdown Information, Rev. 0
 LP-OPS-5-1093, NFPA 805 Procedure Changes, Rev.0
 LP-LOR-1-08, Continuous Rod Motion/Fire/Turbine Trip/Shutdown Outside Control Room, Rev. 6
 Engineering Change 0000069888 Rev. 0 entitled "Sprinkler System Evaluation Control Complex Elevation 124' NFPA 13-1983
 Safety Assessment / Unreviewed Safety Question Determination No. 99-0495 Entitled "Fire Hazards Analysis, Revision 8"
 Engineering Evaluation ECM-99-053, Rev.0 entitled "Fire Door Inspection / Repair Criteria"

Action Requests (ARs) / Nuclear Condition Reports (NCRs) Reviewed During Inspection

AR 266354, Evaluate Best Method to Ensure MEL Batteries Can Perform For Eight (8) Hours

AR 59403 regarding Cable Spreading Room Floor, dated 4/17/2002

PC 3-C98-3841, entitled "Operating Experience – NRC Information Notice 1998-31"

AR 97771, entitled "Operating Experience – NRC Information Notice 2003-08"

AR 175716, entitled "Operating Experience – NRC Information Notice 2005-30"

NCR 061781, OP-880A Manual Actions URI 2004009-03 – Unapproved Local Manual Operator Actions Instead of Required Physical Protection or Separation of Cables to Preclude Fire Damage

NCR 148225, An MCC fire could impact operation of MOVs [URI 2004009-05 – Motor Operated Valves Not Protected From Hot Shorts that Could Bypass Torque Switches].

NCR 143430, Control Complex HVAC Not Supported By Appendix R Fire Study

NCR 205333, Manual Operator Actions in Response to a Fire, RIS 2006-010

NCR 270291, Consider Performing Validation Activities to Provide Additional Assurance that the Site Can Implement B.5.b Strategies Within Required Timeframes

NCR 339018, Fire Safe Shutdown MEL Task Lighting

NCRS Generated as a Result of this Inspection

NCR 458239, NRC Fire Protection Triennial – Spent Fuel Pool Strategy

NCR 458517, NRC Fire Protection Triennial – B.5.b Equipment Inventory

NCR 460602, OP-880B Walkdown for FP Triennial Inspection (Bkrs. 1691 and 1692)

NCR 460663, Fire Safe Shutdown Program Manager Database Entry Error

NCR 461040, NRC Fire Protection Triennial – B.5.b Hands on Training

NCR 461042, NRC Fire Protection Triennial – B.5.b Scenario Aides

NCR 461043, NRC Fire Protection Triennial – PPIP-1 PM Program

NCR 461044, NRC Fire Protection Triennial – CC 95' Combustible Loading

NCR 461110, Appendix R Strategy Removes Protective Relaying (MUP-1C/RWP-2B/SWP-1B)

NCR 461209, NRC FP Inspection Concern w/ CC 124 Ceiling Fire Area Boundary

NCR 461216, NRC Inspection Identified the Need to Have Both Offsite/Onsite PWR

NCR 461736, NRC Fire Protection Triennial – OP-880B

LIST OF ACRONYMS AND ABBREVIATIONS

BTP	Branch Technical Position
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CC	Control Complex
CR1/CR2	Crystal River Unit 1/Unit 2
CR3	Crystal River Unit 3
CRD	Control Rod Drive
EFIC	Emergency Feedwater Initiation and Control
ERFBS	Electrical Raceway Fire Barrier System
FA	Fire Area
FHA	Fire Hazard Analysis
FPC	Florida Power Corporation
FPDS	Fire Protection Data System
FPP	Fire Protection Program
FSAR	Final Safety Analysis Report
ft.	Foot/Feet
FZ	Fire Zone
IMC	Inspection Manual Chapter
MCC	Motor Control Center
MCR	Main Control Room
IN	NRC Information Notice
IP	Inspection Procedure
IR	Inspection Report
NCR	Nuclear Condition Report
NCV	Non-Cited Violation
NFPA	National Fire Protection Association
NRC	United States Nuclear Regulatory Commission
NUREG	An explanatory document published by the NRC
OMA	Operator Manual Action
RCP	Reactor Coolant Pump
Rev	Revision
ROP	Reactor Oversight Process
SDP	Significance Determination Process
SER	Safety Evaluation Report
SP	Surveillance Procedure
SSD	Safe Shutdown
TB	Turbine Building
TS	Technical Specification
URI	Unresolved Item