

## OCONEE TRIENNIAL FIRE PROTECTION INSPECTION PLAN

**Report No.:** 05000269/2019012, 05000270/2019012, AND 05000287/2019012

**Inspection of:** Oconee Nuclear Plant Unit 1, 2, and 3

**Inspection Dates:** Information Gathering Visit: April 8 – 11, 2019  
Week 1 of onsite inspection: May 20 – 24, 2019  
Week 2 of onsite inspection: June 3 – 7, 2019

**Type of Inspection:** Fire Protection (Triennial) - IP 71111.05XT

**Planned Inspection Hours:** 240 per IP 71111.05XT - Assuming no complex findings

**Inspectors:** **R. Fanner** - Lead Inspector  
E. Coffman – Lead Operations/E-lights/Comms  
W. Monk – Lead Electrical  
D. Terry-Ward – Classical Fire Protection & B.5.b

**Inspection Procedure and Objectives:** The inspection will be performed per Inspection Procedure (IP) **71111.05XT**, Fire Protection (Triennial) - Issued January 31, 2013. The objectives of the inspection are to evaluate the design, operational status, and material condition of the licensee's Fire Protection Program (FPP) for selected Fire Areas (FA) and to verify that B.5.b mitigating strategies are feasible.

**Risk-Informed Inspection Assistance:** G. Macdonald, Senior Reactor Analyst, DRP BR 7, discussed the risk rankings of the plant fire areas with the lead inspector during the information gathering site visit. Based on those discussions, and walkdowns of Unit 1 and 2, the following FAs were selected for review:

Protected Service Water (PSW) – Deterministic  
AB092\_F1, Control Battery Charger 2CA – Performance Based  
AB092\_H1, Control Battery Charger 2CS – Performance Based  
U3TB29\_B1, 3TC Switchgear – Performance Based  
U3TB06\_C4, Main FDW Pump 3B Fire – Performance Based  
U2AB081\_B, Performance Based (Transient Fire)  
U2TB15, Main FDW Pump 2A Fire – Performance Based

**The B.5.b mitigating strategy selected for review is:** Manual Operation of TDEFDWP

**Projects Branch Chief/Senior Resident Inspector (SRI) perspective and comments:**

Residents provided some feedback on fire protection program at site and corrective actions

**Allegation Awareness:** J. Worsolio, Senior Project Engineer stated that team may want to focus on any aging management of the fire protection program. Should be sensitive to CRs initiated based on fleet issues.

**Division Director Perspective:**

**Outstanding Items to Be Reviewed for Closure:** None.

**Detailed Inspection Schedule:**

- Preparation in RII Office: May 6 – 9, 2019
- Onsite NRC Team Room: TBD
- Entrance Meeting: Monday, May 20, 2019 @ 1:30 PM
- Daily Debrief Meetings: TBD (Mon.-Thurs.) 4:00 pm in conference room 2B
- Pre-Exit Final Debrief Meeting: TBD
- Exit Meeting: TBD
- In Charge of Exit: Rodney Fanner

**TFPI Team Contact Information:**

Oconee Resident Office: SRI: Mr. E. Crowe (864)-882-6927

Onsite NRC Team Room: TBD

**Lodging During Inspection:** R. Fanner – TBD in Clemson, SC; Team members in the Clemson, SC area

**Licensee Contact Information:**

Mr. Samuel Adams: Sr. Nuclear Engineer (864)-873-3348

**Branch Chief's Instructions:**

Continue to focus on licensee's ability to identify and correct issues that are not in keeping with fire protection commitments.

**Attachments:**

Pertinent inspector information and assignments are listed in the Attachments.

1. Inspector Assignments
2. Previously Inspected Fire Areas
3. Previous inspection results
4. Due Dates for Documentation

**Approving Branch Chief:**

\_\_\_\_\_  
S. Shaeffer, Branch Chief, EB2

\_\_\_\_\_  
Date

**Copies Provided (e-mail):**

DRS/EB2 Branch Chief: S. Shaeffer

DRP Branch Chief: F. Ehrhardt

DRS Branch Files: S:\DRS\Eng Branch 2\Plans\Oconee\_2019012 TFPI Plan.docx

Senior Project Engineer: J. Worosilo

Senior Reactor Analyst: S. Freeman

Inspection Team: William Monk, Ellery Coffman, and Denise Terry-Ward

SUBJECT: OCONEE TRIENNIAL FIRE PROTECTION INSPECTION PLAN dated  
April 30, 2019

**DISTRIBUTION:**

S. Shaeffer, RII, DRS  
F. Ehrhardt, RII, DRP  
J. Worosilo, RII, DRP  
S. Freeman, RII, DRP  
R. Fanner, RII, DRS

\*See previous page for concurrence

PUBLICLY AVAILABLE     NON-PUBLICLY AVAILABLE                       SENSITIVE     NON-SENSITIVE  
ADAMS:  Yes    ACCESSION NUMBER: ML 19120A459 \_\_  SUNSI REVIEW COMPLETE  FORM 665 ATTACHED

OFFICE	RII/ DRS	RII/ DRS				
SIGNATURE	RJF2	SMS				
NAME	RFANNER	SSHAEFFER				
DATE	4/30/2019	4/30/2019				
E-MAIL COPY?	YES NO	YES NO				

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## INSPECTOR ASSIGNMENTS

### Procedure 71111.05XT Inspection Requirements (**Bold:** Consolidate inputs for section)

#### 02.02 Fire Protection Inspection Requirements (

- a. Protection Of Safe Shutdown Capabilities: [**Fanner**, Monk, Coffman, Terry-Ward,]
- b. Passive Fire Protection: [**Terry-Ward**]
- c. Active Fire Protection: [**Terry-Ward**]
- d. Protection From Damage From Fire Suppression Activities: [**Terry-Ward**]

- e. Shutdown from a Primary Control Station

- 1. Methodology: [**Coffman**, Monk]

- Sample functions: Added after Ops and Electrical collaboration

- 2. Operational Implementation: [**Coffman**, Monk]

- f. Circuit Analyses: [**Monk**, Coffman]

- Response to IN 2014-010, Potential Circuit Failure-Induced Secondary Fires or Equipment Damage

- g. Communications:

- 1. Operations: [**Coffman**, Monk]
  - 2. Fire Brigade: [**Terry-Ward**, Fanner]

- h. Emergency Lighting: [**Coffman**, Fanner]

- i. Cold Shutdown Repairs: [**Terry-Ward**, Coffman]

- j. Compensatory Measures:

- 1. Compensatory measures for degraded fire protection features: [**Terry-Ward**, Fanner]
  - 2. Manual actions as compensatory measures for SSD: [**Coffman**, Monk, Fanner]

- k. Radiological Release: [**Terry-Ward**, Fanner]

- l. Non-power Operations: [**Coffman**, Monk, ]

- m. Monitoring Program: [**Fanner**]

- n. Plant Change Evaluation: [**Monk**, Coffman, Terry-Ward, Fanner]

#### 02.03 B.5.b Inspection Activities: [**Terry-Ward**, Fanner]

#### 02.04 Identification and Resolution of Problems: [**Fanner**, All]

**PREVIOUSLY INSPECTED FIRE AREAS**

IR 2002-003

<b>FZ</b>	<b>Description</b>
34	Unit 1 Turbine Building
106	Unit 1 Cable Spreading Room
108	Unit 1 East Penetration Room
SSF	Safe Shutdown Facility

IR 2005-007

<b>FZ</b>	<b>Description</b>
10 through 18, 30-33, 33A, 37, 40, 41	Unit 2 Turbine Building
92	Unit 2 Equipment Room
102	Unit 2 West Penetration Room

IR 2008-007

<b>FZ</b>	<b>Description</b>
89	Unit 3 Equipment Room
101	Unit 3 Cable Spreading Room
112	Unit 3 Control Room

IR 2013-007

<b>FA</b>	<b>Description</b>	<b>Perf. Based or Determ.</b>	<b>Scenario</b>
19	Unit 1 Main Feedwater Pump Area	PB	Fire involving main feedwater pump 1B and non-suppression
45	Units 1 & 2 Block House	PB	Transient fire at riser Q-100
46	CT-4 Block House	DB	Classical FP features
106	Unit 1 Cable Room	PB	CRD Trans/logic cabinet severe fire

IR 2016-007

FZ 33	Unit 2 6900/4160 Volt Switchgear	PB	<i>Focus on scenario C1—2TD Switchgear Severe Fire</i>
FZ 105	Unit 2 Cable Room	PB	<i>Focus on scenario J3—CRD V Reg/Xfmr Fire</i>
FZ 103	Unit 2 East Penetration Room	PB	<i>Focus on scenario B1—MCC 2XH Severe Fire</i>
FZ KEO	Keowee Hydro Station	DB	<i>This is a deterministic fire area. Focus on fixed suppression system</i>

## PAST PLANT PERFORMANCE:

TFPI reports:

### From 2016 report

Green. The NRC identified a Green NCV of 10 CFR 50.48(c) and National Fire Protection Association Standard (NFPA) 805, Section 2.4.2.4 for the licensee's failure to perform an adequate engineering analysis to determine the effects of fire on the ability to achieve the nuclear safety performance criteria, and consequently, did not add an associated variation from deterministic requirements (VFDR) into the Fire probabilistic risk assessment (PRA). Specifically, the licensee's Nuclear Safety Capability Assessment (NSCA) failed to identify cables in the turbine building (TB) that could prevent the operation of the High Pressure Injection (HPI) Pumps. This item was entered into the corrective action program (CAP) as action request (AR) 02011673, and the licensee implemented compensatory measures in the form of hourly fire watches.

The performance deficiency (PD) was more than minor because it was associated with the reactor safety Mitigating Systems cornerstone attribute of protection against external factors (i.e. fire), and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee's failure to analyze the effects of fire damage on the HPI cables in the TB could result in fire damage adversely affecting the ability to achieve and maintain safe and stable conditions. Using the guidance of IMC 0609, App. F, the finding was screened as Green because the finding did not affect the ability to reach and maintain a stable plant condition within the first 24 hours of a fire event (Task 1.4.5-B). A cross cutting aspect in the area of Human Performance, Consistent Process because the licensee did not use a consistent, systematic approach to make decisions, and did not incorporate appropriate risk insights (H.13). (Section 1R05.06)

### From 2013 report

TBD: An NRC-identified Apparent Violation (AV) was identified for the licensee's failure to comply with the requirements of 10 CFR 50.48(c) and National Fire Protection Association Standard 805 (NFPA 805). The Oconee fire probabilistic risk assessment (Fire PRA) failed to address the risk contributions associated with all potentially risk significant fire scenarios. This finding does not represent an immediate safety concern because the licensee entered the issue in the corrective action program as Problem Investigation Program (PIP) O-13-08059 and PIP O-13-08061 and implemented fire watches as compensatory measures.

Failure to comply with the requirements of 10 CFR 50.48(c) and NFPA 805 to address the risk contributions associated with all potentially risk significant fire scenarios was a performance deficiency. This performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone objective of protection against external events (i.e., fire), and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was determined to be potentially greater than Green. Therefore, further analysis is required to assess the significance of the finding. The cause of this finding was determined to have a crosscutting aspect of H.4(c) in the Work Practices component of the Human Performance area because the licensee did not ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety was supported. (Section 1R05.06)

TBD. An NRC-identified Apparent Violation (AV) and associated traditional enforcement violation of Oconee Nuclear Station Renewed Facility Operating License Condition 3.D for Units 1, 2, and 3 was identified for the licensee's failure to implement and maintain in effect all provisions of the approved fire protection program (FPP) that comply with 10 CFR 50.48(c), "National Fire Protection Association Standard NFPA 805." The licensee made a change to the approved FPP involving control of combustible materials when the definition of transient fire loads was revised to exclude fire retardant scaffolding materials as transient fire loads, which would not require the licensee to track these

## DUE DATES FOR DOCUMENTATION

Information gathering	Wednesday, April 9-11, 2019
Onsite 1	Monday, May 20 – 24, 2019
Onsite 2	Monday, June 3 – 7, 2019
Exit Meeting	TBD
Notification Letter	Friday, February 20, 2019
Report inputs to TL	Friday, June 21, 2019
Draft Report to team and Peer Review	Friday, June 28, 2019
Feedback to TL (team and Peer)	Friday, July 6, 2019
TL address comments and forward to BC	Friday, July 10, 2019
Report Due	Monday, July 22, 2019



## SAMPLE FINDING DEVELOPMENT

Ensure you refer to IMC 0609, Appendix F, Attachment 2 for finding significance characterization.

### 1.4.1 Fire Prevention and administrative Controls

- The plant combustible material controls program
- Other administrative controls such as work permit programs
- Hot work fire watches
- Roving or periodic fire watches (other than in category 1.4.2, below)
- Training programs

### 1.4.2 Fixed Fire Protection Systems

- Fixed fire detection systems
- Fixed fire suppression systems (automatic or manual)
- Fire watches posted as a compensatory measure for a fixed fire protection system outage or degradation

### 1.4.3 Fire Confinement

- Fire barrier elements that separate one fire area from another
- Penetration seals
- Water curtains
- Fire and/or smoke dampers
- Fire doors

### 1.4.4 Localized Cable or Component Protection

- Passive physical features installed for the thermal/fire protection of cables, cable raceways, or individual components
- Raceways or component fire barriers (e.g., cable wraps)
- Radiant heat shields protecting a component or cable
- Spatial separation (e.g., per App. R Section III.G.2)

### 1.4.5 Post-fire Safe Shutdown (SSD)

- Systems or functions identified in the post-fire SSD analysis
- Systems or functions relied upon for post-fire SSD
- Post-fire SSD component list (e.g., completeness)
- Post-fire SSD analysis (e.g., completeness)
- Post-fire plant response procedures
- Operator manual actions
- Alternate shutdown (e.g., control room abandonment)
- Circuit failure modes and effects (e.g., spurious operation issues)

### 1.4.6 Manual Firefighting

- Hose Station
- Fire Extinguishers
- Fire pre-plans

### 1.4.7 Fire Water Supply

- Fire pumps, yard loop piping, and water sources