UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

February 10, 2016

Mr. Brian Sullivan
Site Vice President
Entergy Nuclear Northeast
James A. FitzPatrick Nuclear Power Plant
P.O. Box 110
Lycoming, NY 13093

SUBJECT: JAMES A. FITZPATRICK NUCLEAR POWER PLANT - INTEGRATED INSPECTION REPORT 05000333/2015004 AND INDEPENDENT SPENT FUEL STORAGE INSTALLATION REPORT 07200012/2015001

Dear Mr. Sullivan:

On December 31, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your James A. FitzPatrick Nuclear Power Plant (FitzPatrick). The enclosed inspection report documents the inspection results which were discussed on January 26, 2016, with you and other members of your staff.

The inspection examined activities conducted under your license as they relate 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.

This report documents two violations of NRC requirements, both of which were of very low safety significance (Green or Severity Level IV). Additionally, a licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. However, because of the very low safety significance, and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations, consistent with Section 2.3.2.a of the NRC Enforcement Policy. If you contest the non-cited violations in this report, 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 I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at FitzPatrick. In addition, if you disagree with the cross-cutting aspect assigned to any finding 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, Region I, and the NRC Resident Inspector at FitzPatrick.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390 of the NRCs "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's Public Document Room or from the Publicly Available Records component of the NRC's Agencywide Documents Access and Management 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/

Arthur L. Burritt, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Docket No. 50-333
License No. DPR-59

Enclosure:
Inspection Report 05000333/2015004
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390 of the NRCs "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's Public Document Room or from the Publicly Available Records component of the NRC's Agencywide Documents Access and Management 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/

Arthur L. Burritt, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Docket No. 50-333
License No. DPR-59

Enclosure:
Inspection Report 05000333/2015004
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

DISTRIBUTION: (via email)

DDorman, RA
DLew, DRA
MScott, DRP
JColaccino, DRP
RLorson, DRS
BSmith, DRS
ABurritt, DRP
CBickett, DRP
LCline, DRP
BLin, DRP
EKnutson, DRP, SRI
BSienel, DRP, RI
CSantos, RI OEDO
RidsNrrPMFitzPatrick Resource
RidsNrrDorlLpl1-1 Resource
ROPreports Resource

DOCUMENT NAME: G:\DRP\BRANCH5\6-Fitz\Reports\2015\2015-004\Fitz IR 2015-004 Final.docx
ADAMS Accession No. **ML16042A066**

☑ SUNSI Review		☑ Non-Sensitive ☐ Sensitive		☑ Publicly Available ☐ Non-Publicly Available	
OFFICE	RI/DRP	RI/DRP	RI/DRP		
NAME	EKnutson/ALB for	BLin/BL	ABurritt/ALB		
DATE	2/9/16	2/9/16	2/10/16		

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.	50-333
License No.	DPR-59
Report No.	05000333/2015004
Licensee:	Entergy Nuclear Northeast (Entergy)
Facility:	James A. FitzPatrick Nuclear Power Plant
Location:	Scriba, NY
Dates:	October 1, 2015, through December 31, 2015
Inspectors:	E. Knutson, Senior Resident Inspector B. Sienel, Resident Inspector B. Bollinger, Health Physicist O. Masnyk Bailey, Health Physicist R. Rolph, Health Physicist J. Schoppy, Senior Reactor Inspector
Approved by:	Arthur L. Burritt, Chief Reactor Projects Branch 5 Division of Reactor Projects

TABLE OF CONTENTS

SUMMARY

Inspection Report 05000333/2015004; 10/01/2015 – 12/31/2015; James A. FitzPatrick Nuclear Power Plant (FitzPatrick); Maintenance Risk Assessments and Operability Determinations.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. The inspectors identified two findings of very low safety significance (Green or Severity Level IV), both of which were non-cited violations (NCVs). The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process (SDP)," dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green NCV of Title10 of the *Code of Federal Regulations* (10 CFR) 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," for failure to adequately manage the increase in risk during planned maintenance on the 'A' emergency diesel generator (EDG). Specifically, Entergy staff action to make the 'C' EDG unavailable while the 'A' EDG was already unavailable resulted in an unplanned increase in overall plant risk and deviation from the approved EDG outage risk management plan from a risk category of Green to the next higher risk category of Yellow. As immediate corrective action, the issue was entered into the corrective action program (CAP) as condition report (CR)-JAF-2015-05242.

  The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the 'C' EDG was not available when it should have been, in accordance with the approved risk management plan, which resulted in an unplanned escalation of risk from Green to Yellow. Additionally, this finding was similar to example 7.e in IMC 0612, Appendix E, "Examples of Minor Issues." In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined that this finding was of very low safety significance (Green) because the performance deficiency was not a design or qualification deficiency, did not involve an actual loss of safety function, did not represent actual loss of a safety function of a single train for greater than its Technical Specification (TS) allowed outage time, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding had a cross-cutting aspect in the area of Human Performance, Work Management, because FitzPatrick did not execute the 'A' EDG maintenance outage work activities as planned, and after deviating from that plan, did not identify and manage the risk of barring the 'C' EDG while the 'A' EDG was unavailable [H.5]. (Section 1R13)

Cornerstone: Barrier Integrity

- Severity Level IV. The inspectors identified a Severity Level (SL) IV NCV of 10 CFR 50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors," because inoperability of the secondary containment system was not reported to the NRC within eight hours of when the need to do so should reasonably have been recognized, as required by 10 CFR 50.72(b)(3)(v), "Event or Condition that Could Have Prevented Fulfillment of a Safety Function." Specifically, positive pressure in the secondary containment due to a previously unidentified equipment malfunction that occurred during transition between the reactor building being isolated and normal reactor building ventilation being in service was not promptly recognized as a condition that caused the single train secondary containment system to be inoperable and therefore to be reportable under 10 CFR 50.72. This issue was entered into the CAP as CR-JAF-2015-05244 and CR-JAF-2015-05265.

  The inspectors determined that the failure to inform the NRC of the secondary containment system inoperability within eight hours in accordance with 10 CFR 50.72(b)(3)(v) was a performance deficiency that was reasonably within Entergy's ability to foresee and correct. The inspectors evaluated this performance deficiency in accordance with the traditional enforcement process because the issue impacted the regulatory process, in that a safety system functional failure was not reported to the NRC within the required timeframe, thereby delaying the NRC's opportunity to review the matter. Using Example 6.9.d.9 from the NRC Enforcement Policy, the inspectors determined that the violation was an SL IV (more than minor concern that resulted in no or relatively inappreciable potential safety or security consequence) violation, because Entergy personnel failed to make a report required by 10 CFR 50.72 when information that the report was required had been reasonably within their ability to have identified. In accordance with IMC 0612, "Power Reactor Inspection Reports," traditional enforcement issues are not assigned cross-cutting aspects. (Section 1R15)

Other Findings

A violation of very low safety significance that was identified by FitzPatrick was reviewed by the inspectors. Corrective actions taken or planned by FitzPatrick have been entered into FitzPatrick's CAP. This violation and corrective action tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

FitzPatrick began the inspection period at 100 percent power. On October 14, 2015, operators reduced power to 67 percent to perform a control rod sequence exchange, single control rod scram time testing, main turbine valve testing, and control rod hydraulic control unit maintenance. Operators restored power to 100 percent later that day, and the plant continued to operate at or near 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 - 2 samples)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of FitzPatrick's readiness for the onset of seasonal low temperatures. The review focused on the high pressure coolant injection (HPCI) and EDG room ventilation systems. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), TSs, control room logs, and the CAP to determine what temperatures or other seasonal weather could challenge these systems, and to ensure FitzPatrick personnel had adequately prepared for these challenges. The inspectors reviewed station procedures, including FitzPatrick's seasonal weather preparation procedure and applicable operating procedures. The inspectors performed walkdowns of the selected systems to ensure station personnel identified issues that could challenge the operability of the systems during cold weather conditions. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

.2 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

On November 6, 2015, the inspectors reviewed FitzPatrick's preparations for high winds due to an arriving weather front. The inspectors walked down exterior portions of the plant to identify loose or inadequately protected equipment and materials. The inspectors verified that the circulating water and service water systems were operated in accordance with procedural requirements for high wind conditions. The plant did not experience any significant operational issues as a result of the high wind conditions.

b. Findings

No findings were identified.

1R04 Equipment Alignment

Partial System Walkdown (71111.04 - 3 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- 'B' and 'D' EDG systems while reserve station service transformer 71T-2 and 115 kilovolt (kV) offsite line 4 were inoperable for planned maintenance on October 1, 2015
- 'A' core spray system while 'A' low pressure coolant injection inverter was inoperable due to an emergent equipment problem on October 13, 2015
- Reactor core isolation cooling (RCIC) system due to it being a high risk significant single train system on November 4, 2015

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the UFSAR, TSs, CRs, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their intended safety functions. The inspectors performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether Entergy staff had properly identified equipment issues and entered them into the CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Resident Inspector Quarterly Walkdowns (71111.05Q - 5 samples)

a. Inspection Scope

The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that Entergy controlled combustible materials and ignition sources in accordance with administrative procedures. The inspectors verified that fire protection and suppression equipment were available for use as specified in the area pre-fire plan, and passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out of service, degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

- Cable spreading room, fire area/zone VII/CS-1, on November 3, 2015
- 'A' and 'B' battery rooms, battery charger rooms, and corridor, fire area/zone III/BR-1, BR-2, IV/BR-3, BR-4, and XVI/BR-5, on November 3, 2015
- Turbine building 252 foot elevation, fire area/zone IE/TB-1, on November 10, 2015
- Turbine operating floor, turbine building 300 foot elevation, fire area/zone IE/TB-1, on November 12, 2015
- Reactor building 326 foot elevation, fire area/zone IX/RB-1A, on December 3, 2015

b. Findings

No findings were identified.

.2 Fire Protection - Drill Observation (71111.05A - 1 sample)

a. Inspection Scope

The inspectors observed an unannounced fire brigade drill conducted on December 14, 2015, that involved a fire in the control room fan room. The inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that FitzPatrick personnel identified deficiencies, openly discussed them in a self-critical manner at the debrief, and took appropriate corrective actions as required. The inspectors evaluated specific attributes as follows:

- Proper wearing of turnout gear and self-contained breathing apparatus
- Proper use and layout of fire hoses
- Employment of appropriate fire-fighting techniques
- Sufficient fire-fighting equipment brought to the scene
- Effectiveness of command and control
- Search for victims and propagation of the fire into other plant areas
- Utilization of pre-planned strategies
- Adherence to the pre-planned drill scenario
- Drill objectives met

The inspectors also evaluated the fire brigade's actions to determine whether these actions were in accordance with FitzPatrick's fire-fighting strategies.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11Q - 2 samples)

.1 Quarterly Review of Licensed Operator Requalification Testing and Training

a. Inspection Scope

The inspectors observed licensed operator simulator training on November 9, 2015, which included a reactor water recirculation pump speed controller malfunction, fuel

failure, a feedwater pipe break, and main steam isolation valve closure. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room

a. Inspection Scope

On October 14, 2015, operators performed a power reduction to 67 percent to perform a control rod sequence exchange, single control rod scram time testing, main turbine valve testing, and maintenance on four hydraulic control units. The inspectors observed portions of the power escalation, including reactivity manipulations using control rods and the reactor water recirculation system. The inspectors observed the crew brief for, and conduct of, main turbine stop valve limit switch instrument testing. The inspectors observed crew actions to free control rods that were stuck at the fully inserted position following control rod scram time testing. And, the inspectors observed the beginning of shift crew brief following turnover between the day and night shift operators. The inspectors observed crew performance to verify that procedure use, crew communications, and coordination of activities between work groups met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q - 1 sample)

a. Inspection Scope

The inspectors reviewed the sample listed below to assess the effectiveness of maintenance activities on structure, system, or component (SSC) performance and reliability. The inspectors reviewed system health reports, CAP documents, and maintenance rule basis documents to ensure that Entergy staff was identifying and properly evaluating performance problems within the scope of the maintenance rule. For each sample selected, the inspectors verified that the SSC was properly scoped into the maintenance rule in accordance with 10 CFR 50.65 and verified that the (a)(2) performance criteria established by Entergy staff was reasonable. For SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these SSCs to (a)(2). Additionally, the inspectors ensured that Entergy staff was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

- Residual heat removal service water (RHRSW)

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 3 samples)

a. Inspection Scope

The inspectors reviewed maintenance activities to verify that the appropriate risk assessments were performed prior to removing equipment for work. The inspectors reviewed whether risk assessments were performed as required by 10 CFR 50.65(a)(4), and were accurate and complete. When emergent work was performed, the inspectors reviewed whether plant risk was promptly reassessed and managed. The inspectors also walked down selected areas of the plant which became more risk significant because of the maintenance activities to ensure they were appropriately controlled to maintain the expected risk condition. The reviews focused on the following activities:

- Emergent maintenance to troubleshoot the 'A' low pressure coolant injection independent power supply cooling fans the week of October 12, 2015
- Planned maintenance on the 'B' core spray system, 'B' standby gas treatment system, and the 'B' standby liquid control system the week of October 19, 2015
- Planned maintenance on the 'A' EDG the week of November 2, 2015

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," for failure to adequately manage the increase in risk during planned maintenance on the 'A' EDG. Specifically, Entergy staff action to make the 'C' EDG unavailable while the 'A' EDG was already unavailable resulted in an unplanned increase in overall plant risk and deviation from the approved EDG outage risk management plan from a risk category of Green to the next higher risk category of Yellow.

Description. FitzPatrick has two EDGs for each of the two divisions of safety equipment; 'A' and 'C' EDGs supply division 1, and 'B' and 'D' EDGs supply division 2. As a result of this atypically large emergency electrical power capacity, FitzPatrick has an allowed outage time of two weeks for a train of EDGs. TS treats a divisional pair of EDGs as a single subsystem, therefore both are considered TS-inoperable during a maintenance period, regardless of their individual status. However, in terms of risk, having one of these EDGs available (that is, capable of performing its intended function) results in overall plant risk being lower than if neither is available. Entergy procedure EN-WM-104, "On Line Risk Assessment," establishes a color-coded system to categorize overall plant risk; if one EDG in the affected train is available, risk is in the lowest category of Green, whereas, if both divisional EDGs are unavailable, then the risk is elevated to the next higher category of Yellow. 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," paragraph (a)(4), requires that licensees assess and manage the increase in risk that may result from maintenance activities. As a result, FitzPatrick typically plans their EDG outages for one engine at a

time, and leaves at least one of the two available throughout the outage, thereby continuously maintaining overall plant risk as low as possible (Green).

On November 2, 2015, FitzPatrick began a four day planned maintenance period for the 'A' EDG. The highest planned risk category during this period was Green, due to at least one of the two EDGs being available throughout the period. The final post-maintenance test (PMT) would be the monthly 'A' and 'C' EDG surveillance, which runs both engines in parallel. No more than 24 hours prior to running an EDG, FitzPatrick 'bars,' (manually rotates) the engine to pre-lubricate the crankshaft. While this is being done, that EDG is considered unavailable. The schedule had been to perform overspeed trip testing of the 'A' EDG at the conclusion of maintenance activities, and after post-run mechanical checks had been completed, declare it 'available.' Then the 'C' EDG could be barred (with the resultant unavailability) in preparation for the monthly surveillance, while maintaining Green risk.

Instead, the inspectors identified that the 'C' EDG was barred while the 'A' EDG was still under protective tagging for its post-overspeed trip test mechanical checks, and therefore, unavailable. As a result, and contrary to the approved EDG outage risk management plan, the plant risk category was elevated to Yellow for the approximately 12 minutes that the 'C' EDG was being barred.

The inspectors discussed this issue with the Entergy staff, who entered the issue into the CAP as CR-JAF-2015-05242.

Analysis. The inspectors determined that Entergy's failure to manage overall plant risk during the November 2-5, 2015, 'A' EDG planned maintenance period, in accordance with 10 CFR 50.65(a)(4), was a performance deficiency that was within FitzPatrick's ability to foresee and correct, and should have been prevented. This finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the 'C' EDG was not available when it should have been, in accordance with the approved risk management plan, which resulted in an unplanned escalation of risk from Green to Yellow. Additionally, this finding was similar to example 7.e in IMC 0612, Appendix E, "Examples of Minor Issues."

In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined that this finding was of very low safety significance (Green) because the performance deficiency was not a design or qualification deficiency, did not involve an actual loss of safety function, did not represent actual loss of a safety function of a single train for greater than its TS allowed outage time, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event.

This finding had a cross-cutting aspect in the area of Human Performance, Work Management, because FitzPatrick did not execute the 'A' EDG maintenance outage work activities as planned, and after deviating from that plan, did not identify and manage the risk of barring the 'C' EDG while the 'A' EDG was unavailable [H.5].

Enforcement. 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," paragraph (a)(4), states, in part, "Before performing maintenance activities (including but not limited to surveillance, post-maintenance testing, and corrective and preventive maintenance), the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. . ." Contrary to this, on November 5, 2015, during a planned maintenance period for the 'A' EDG, Entergy personnel deviated from the approved risk management plan and caused an unplanned increase in overall plant risk of Green to that of Yellow. This occurred when Entergy barred the 'C' EDG thereby rendering it unavailable for a period of approximately 12 minutes, while the 'A' EDG was under protective tagging for post-overspeed trip test mechanical checks and therefore also unavailable. Because this violation was of very low safety significance (Green) and Entergy entered this issue into their CAP as CR-JAF-2015-05242, this violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy. **(NCV 05000333/2015004-01, Unintended Elevated Plant Risk During EDG Maintenance)**

1R15 Operability Determinations and Functionality Assessments (71111.15 - 4 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions:

- CR-JAF-2015-04376 concerning an event from September 18, 2015, failure of the refuel floor exhaust fan 'A' discharge isolation damper to fully close, which should have caused refuel floor ventilation exhaust fan 'A' to automatically shut down and refuel floor ventilation exhaust fan 'B' to automatically start, but did not, on October 1, 2015
- CR-JAF-2015-04760 concerning the failure of main steam leakage collection valve 29MOV-202B to meet its opening time requirement during surveillance testing on October 24, 2015; the inspectors confirmed that the tag out for the 'B' train did not also render the 'A' train equipment inoperable
- CR-JAF-2015-05064 concerning an unexpectedly large change in pump speed and discharge flow when the HPCI pump was transferred from automatic to manual control during the performance of quarterly surveillance testing on November 17, 2015
- Review of the FitzPatrick operator workaround program

The inspectors selected these issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the operability determinations to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and UFSAR to Entergy staff's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by Entergy staff. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations.

b. Findings

Introduction. The inspectors identified a SL IV NCV of 10 CFR 50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors," because inoperability of the secondary containment system was not reported to the NRC within eight hours of when the need to do so should reasonably have been recognized, as required by 10 CFR 50.72(b)(3)(v), "Event or Condition that Could Have Prevented Fulfillment of a Safety Function." Specifically, positive pressure in the secondary containment due to a previously unidentified equipment malfunction that occurred during transition between the reactor building being isolated and normal reactor building ventilation being in service was not promptly recognized as a condition that caused the single train secondary containment system to be inoperable and therefore to be reportable under 10 CFR 50.72.

Description. On September 18, 2015, secondary containment pressure became positive for approximately three minutes due to a malfunction of the 'A' reactor building ventilation system. The issue was entered into the CAP as CR-JAF-2015-04166. This and other issues with secondary containment pressure control resulted in numerous corrective actions. One action was to evaluate the pressure response of secondary containment during transition between normal reactor building ventilation in operation and the reactor building isolated with the standby gas treatment system in operation, and vice versa. This action established that short duration pressure excursions to less than the TS required minimum vacuum of 0.25 inches water gauge may occur during the transition. As a result, the operations department established the practice of declaring secondary containment inoperable prior to switching modes of reactor building ventilation, to utilize the allowance of NUREG-1022, "Event Report Guidelines 10 CFR 50.72 and 50.73," that reports in accordance with 10 CFR 50.72(b)(3)(v) and 50.73(a)(2)(v) for an event or condition that could have prevented fulfillment of a safety function are not required when the system has previously been declared inoperable as part of a planned evolution for maintenance or surveillance testing when done in accordance with an approved procedure.

On December 1, 2015, operators prepared to perform testing on the opposite train of reactor building ventilation than had been in service during the September 18, 2015 event, to verify it did not have a similar problem during reactor building isolation (CR-JAF-2015-04166, corrective action 24). After declaring secondary containment inoperable, operators isolated the reactor building and observed that the ventilation system performed as expected; specifically, that the 'B' refuel floor exhaust fan discharge damper, 66AOD-106B, closed as required. However, when operators restored normal reactor building ventilation to service, the 'B' refuel floor exhaust fan, 66FN-13B, failed to start for approximately one minute while 66AOD-106B was open. This resulted in secondary containment pressure going positive. When the fan did start, normal secondary containment pressure was promptly restored. This issue was entered into the CAP as CR-JAF-2015-05244.

Operators did not consider this occurrence to be reportable under 10 CFR 50.72, due to the previously discussed allowance in NUREG-1022, Section 3.2.7, "Event or Condition that Could Have Prevented Fulfillment of a Safety Function." Additionally, they considered that the safety function of the reactor building ventilation system was to isolate, which had been demonstrated to operate satisfactorily. If pressure temporarily went positive during the transition back to normal ventilation, it was of no consequence

because the safety function had already been accomplished and the required secondary containment pressure would promptly be restored.

The inspectors determined that the operators had not properly applied the non-reportability allowance of NUREG-1022, Section 3.2.7. Specifically, it states, ". . . reports are not required when systems are declared inoperable as part of a planned evolution for maintenance or surveillance testing when done in accordance with an approved procedure and the plant's TS (unless a condition is discovered that would have resulted in the system being declared inoperable)." In this case, the secondary containment isolation had been performed to verify proper operation of damper 66AOD-106B, and this had been completed satisfactorily. However, the failure of exhaust fan 66FN-13B to start as required was a previously unidentified condition which would have resulted in secondary containment being declared inoperable, therefore making the event reportable.

With respect to ability of the system to perform its safety function, IMC 0326, "Operability Determinations and Functionality Assessments for Conditions Adverse to Quality or Safety," Section 03.08, states, ". . . In order to be considered operable, an SSC must be capable of performing the specified safety functions of its design . . . In addition, TS operability considerations require that an SSC meet all surveillance requirements . . . An SSC that does not meet an SR [surveillance requirement] must be declared inoperable because the LCO [limiting condition for operation] operability requirement(s) are not met." In this case, TS Surveillance Requirement 3.6.4.1.1 requires that secondary containment vacuum be maintained greater than or equal to 0.25 inch of vacuum water gauge. Therefore, secondary containment was inoperable during the period that pressure was positive. Since secondary containment is a single train system, this condition was reportable in accordance with NUREG-1022, Section 3.2.7, even if the duration of the TS non-compliance is less than the allowed outage time.

After discussion with the Entergy staff, this event was reported to the NRC in accordance with 10 CFR 50.72(b)(3)(v)(C) at 2:14 p.m. on December 2, 2015. The event had occurred at 8:36 p.m. the previous day, therefore the eight hour reporting requirement was not satisfied. This aspect of the issue was entered into the CAP as CR-JAF-2015-05265.

Analysis. The inspectors determined that the failure to inform the NRC of the secondary containment system inoperability within eight hours in accordance with 10 CFR 50.72(b)(3)(v) was a performance deficiency that was reasonably within Entergy's ability to foresee and correct. The inspectors evaluated this performance deficiency in accordance with the traditional enforcement process because the issue impacted the regulatory process, in that a safety system functional failure was not reported to the NRC within the required timeframe, thereby delaying the NRC's opportunity to review the matter. Using Example 6.9.d.9 from the NRC Enforcement Policy, the inspectors determined that the violation was a SL IV (more than minor concern that resulted in no or relatively inappreciable potential safety or security consequence) violation, because Entergy personnel failed to make a report required by 10 CFR 50.72 when information that the report was required had been reasonably within their ability to have identified. In accordance with IMC 0612, "Power Reactor Inspection Reports," traditional enforcement issues are not assigned cross-cutting aspects.

Enforcement. 10 CFR 50.72(b)(3)(v)(C) requires, in part, that licensees shall notify the NRC within eight hours of the occurrence of any event or condition that at the time of discovery could have prevented the fulfillment of a safety function of structures or systems that are needed to control the release of radioactive material. Contrary to this, on December 1, 2015, at 8:36 p.m., positive pressure in secondary containment that occurred during transition between the reactor building being isolated and normal reactor building ventilation in service was not promptly recognized by Entergy personnel as a condition that was reportable to the NRC within eight hours in accordance with 10 CFR 50.72(b)(3)(v)(C) and consequently was not reported until 2:14 p.m. on December 2, 2015, a period in excess of 17 hours. Because this SL IV violation was of very low safety significance, was not repetitive or willful, and was placed in the CAP as CR-JAF-2015-05244 and CR-JAF-2015-05265, this violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy. **(NCV 05000333/2013005-02, Untimely 10 CFR 50.72 Notification of Inoperable Secondary Containment)**

1R18 Plant Modifications (71111.18 - 1 sample)

Temporary Modifications

a. Inspection Scope

The inspectors evaluated Temporary Modification 59376, "34FWS-16A / 34FWS-16B Seal Welding." These are the normally open inlet blocking valves for the two feedwater trains to the startup flow control valve, 34FCV-137. The startup flow control valve is used to control reactor pressure vessel (RPV) water level under conditions of low steam flow, such as startup and shutdown, or after a reactor scram. 34FWS-16A and -16B had developed significant water leakage past the pressure seal ring at the body-to-bonnet joint after startup from the 2014 refueling outage (on the order of several gallons per minute each). Attempts to stop the leakage using sealant injection were unsuccessful. Leakage could be significantly reduced by closing the valves, but this would render the startup flow control valve inoperable, thus complicating RPV level control following a scram. This modification eliminated the leakage by moving the pressure boundary from the pressure seal ring to the valve yoke using cover plates seal welded to the bottom of the yoke clamp and seal welds at other leakage paths, such as the bonnet studs and nuts. The inspectors reviewed the temporary modification to verify that it did not degrade the design bases, licensing bases, and performance capabilities of the feedwater system. The inspectors also examined the completed modification.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 - 6 samples)

a. Inspection Scope

The inspectors reviewed the PMTs for the maintenance activities listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure was consistent with the information in the

applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data to verify that the test results adequately demonstrated restoration of the affected safety functions.

- Work Order (WO) 00341284, Replace 27SV-118B, containment atmosphere dilution liquid nitrogen tank 'B' outlet safety valve; PMT was to leak check the mechanical joint, the welded flange joint, and verify no leakage from the outlet, on October 1, 2015
- WO 00328085, Replace stationary auxiliary switch for circuit breaker 71-10212, reserve station service transformer T-2 feed to reactor water recirculation motor generator set 'B' 4 kV bus 10200; PMT was to cycle the breaker in the test position per AP-12.06, "Equipment Status Control," on October 2, 2015
- WO 52471315 to perform preventive maintenance (PM) to replace the 'B' core spray instrument power supply capacitors, on October 20, 2015
- WO 52467726 to perform PM on 'B' standby gas treatment inlet valve, 01-125MOV-14B, 600V motor control center, on October 21, 2015
- WO 52478894 to perform 'B' standby liquid control pump offline motor testing, on October 22, 2015
- Multiple WOs for 'A' EDG limiting condition for operation maintenance on November 5, 2015

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 - 4 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant SSCs to assess whether test results satisfied TSs, the UFSAR, and station procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied. Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

- ST-1E, "Main Turbine Stop Valves Limit Switch Channel Functional Test," on October 14, 2015
- ISP-100D-RPS, "RPS [reactor protection system] Instrument Functional Test/Calibration (ATTS) [analog transmitter trip system]**," on October 26, 2015
- ST-3JB, "Core Spray Initiation Logic System B Functional Test," on October 27, 2015
- ST-20C, "Control Rod Operability for Fully Withdrawn Control Rods," on November 8, 2015

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01 - 1 sample)

a. Inspection Scope

The inspectors reviewed Entergy's performance in assessing and controlling radiological hazards in the workplace. The inspectors used the requirements contained in 10 CFR 20, TSs, applicable Regulatory Guides (RGs), and the procedures required by TSs as criteria for determining compliance.

Contamination and Radioactive Material Control

The inspectors observed the monitoring of potentially contaminated material leaving the radiological control area and inspected the methods and radiation monitoring instrumentation used for control, survey, and release of that material.

The inspectors selected several sealed sources from inventory records and assessed whether the sources were accounted for and were tested for loose surface contamination. The inspectors evaluated whether any recent transactions involving nationally tracked sources were reported in accordance with requirements.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

a. Inspection Scope

The inspectors verified that various potential in-plant airborne sources were being controlled consistent with As Low As is Reasonably Achievable (ALARA) principles and the use of respiratory protection devices, as appropriate. The inspectors used the requirements in 10 CFR 20, the guidance in applicable RGs, and Entergy's TSs and procedures for determining compliance.

Engineering Controls

The inspectors assessed whether Entergy had established threshold criteria for evaluating levels of airborne beta-emitting and alpha-emitting radionuclides.

Use of Respiratory Protection Devices

The inspectors selected two work activities where respiratory protection devices were used to limit the intake of radioactive materials, and assessed whether Entergy

performed an evaluation concluding that further engineering controls were not practical and that the use of respirators was ALARA. The inspectors also evaluated whether Entergy had established means (such as routine bioassay) to determine if the level of protection (protection factor) provided by the respiratory protection devices during use was at least as good as that assumed in Entergy's work controls and dose assessment. The inspectors evaluated whether the devices were used consistent with their National Institute of Occupational Safety and Health/Mine Safety and Health Association certification.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04 - 1 sample)

a. Inspection Scope

The inspectors evaluated the monitoring, assessment, and reporting of occupational dose. The inspectors used the requirements in 10 CFR 20, the guidance in various RGs, and requirements in Entergy's TSs and procedures for determining compliance.

Routine Bioassay (In Vivo)

The inspectors reviewed Entergy's evaluation for use of its portal radiation monitors as a passive monitoring system. The inspectors assessed if instrument minimum detectable activities were adequate to determine the potential for internally deposited radionuclides sufficient to prompt an investigation. The inspectors selected four whole body counters and whether the counting system used had sufficient counting time/low background to ensure appropriate sensitivity for the potential radionuclides of interest. The inspectors reviewed the radionuclide library used for the count system to determine if it included the gamma-emitting radionuclides that exist at the site. The inspectors evaluated how Entergy accounts for hard-to-detect radionuclides in their internal dose assessments, if applicable.

Special Bioassay (In Vitro)

The inspectors reviewed the vendor laboratory quality assurance program and assessed whether the laboratory participated in an industry recognized cross-check program including whether out-of-tolerance results were reviewed, evaluated and resolved appropriately.

Neutron Dose Assessment

The inspectors evaluated Entergy's neutron dosimetry program, including dosimeter types and radiation survey instrumentation.

The inspectors reviewed more than ten neutron exposure occurrences and assessed whether (a) dosimetry and/or instrumentation was appropriate for the expected neutron spectra, (b) there was sufficient sensitivity for low dose and/or dose rate measurement, and (c) neutron dosimetry and/or neutron detection instruments were properly calibrated. The inspectors also assessed whether interference by gamma radiation had been

accounted for in the calibration and whether time and motion evaluations were representative of actual neutron exposure events.

Assigning Dose of Record

For the special dosimetric situations reviewed in this section, the inspectors assessed how Entergy assigned dose of record for total effective dose equivalent, shallow dose equivalent, and lens dose equivalent. This included an assessment of external and internal monitoring results, supplementary information on individual exposures, and radiation surveys when dose assignment was based on these techniques.

Problem Identification and Resolution

The inspectors assessed whether problems associated with occupational dose assessment were being identified by Entergy at an appropriate threshold and were properly addressed for resolution in the CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by Entergy involving occupational dose assessment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 - 6 samples)

.1 Mitigating Systems Performance Index

a. Inspection Scope

The inspectors reviewed FitzPatrick staff's submittal of the Mitigating Systems Performance Index (MSPI) for the following systems for the period of July 1, 2014, through September 30, 2015:

- MSPI, emergency alternating current power system
- MSPI, high pressure injection system
- MSPI, heat removal system
- MSPI, residual heat removal system
- MSPI, cooling water systems

To determine the accuracy of the performance indicator (PI) data reported during this period, the inspectors used definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, and discussed specific questions with the responsible system engineer. The inspectors also reviewed FitzPatrick operator narrative logs, CRs, NRC integrated inspection reports, and the FitzPatrick MSPI basis document to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.2 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled FitzPatrick staff's submittals for the occupational exposure control effectiveness PI for the period from the first quarter 2014 through the fourth quarter 2014. The inspectors used PI definitions and guidance contained in NEI Document 99-02, Revision 7, to determine the accuracy of the PI data reported.

To assess the adequacy of FitzPatrick staff's PI data collection and analyses, the inspectors discussed with radiation protection staff the scope and breadth of its data review and the results of those reviews. The inspectors independently reviewed electronic personal dosimetry accumulated dose alarms, dose reports, and dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized PI occurrences. The inspectors also conducted walk-downs of numerous locked high radiation area entrances to determine the adequacy of the controls in place for these areas.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 - 3 samples)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that Entergy staff entered issues into the CAP at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the CAP and periodically attended CR screening meetings.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a semi-annual review of site issues, as required by Inspection Procedure 71152, "Problem Identification and Resolution," to identify trends that might

indicate the existence of more significant safety issues. In this review, the inspectors included repetitive or closely-related issues that may have been documented by Entergy outside of the CAP, such as trend reports, PIs, system health reports, and CAP backlogs. The inspectors also reviewed Entergy's CAP database for the third and fourth quarters of 2015 to assess CRs written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRC's daily CR review (Section 4OA2.1). The inspectors reviewed Entergy's two most recent Aggregate Performance Review Meeting (APRM) Reports, conducted in accordance with EN-LI-121, "Trending and Performance Review Process," to verify that Entergy personnel were appropriately evaluating and trending adverse conditions in accordance with applicable procedures.

b. Findings and Observations

No findings were identified.

The inspectors evaluated a sample of CRs generated over the course of the past two quarters by departments that provide input to the quarterly Aggregate Performance Review. The inspectors determined that, in most cases, the issues were appropriately evaluated by Entergy staff for potential trends and resolved within the scope of the CAP. For example, the inspectors noted that emergency preparedness telecommunication equipment issues were being tracked in both of the most recent APRM reports, consistent with the inspectors' assessment.

However, the inspectors noted one area that they considered would be appropriate to be tracked as a problem at the plant level, and that was the area of out-of-calibration maintenance and test equipment (M&TE); specifically, multiple occasions when M&TE had been found to be out of tolerance during periodic calibration, thereby requiring evaluation as to whether their previous use had possibly affected or invalidated the results of required activities such as surveillances. The inspectors previously identified this as an issue in the semi-annual trend review for the second half of 2014, as documented in Integrated Inspection Report 05000333/2014005. The inspectors noted that in September 2015, flowmeter transducers that had been used to measure residual heat removal (RHR) system flow during quarterly TS-required surveillance tests were found to have been out of tolerance. As a result, the RHR flow established during these tests may have been less than the minimum required by TS, and therefore may have constituted missed surveillances. Although inconsequential, in that when these surveillance tests were again performed with properly calibrated flowmeter transducers, the results were satisfactory, the potential exists for future events which may not be so easily addressed. The issue of out-of-calibration M&TE is being tracked at the department level as an improvement item; however, the inspectors considered that it deserved greater attention as an area for improvement at the plant level. This issue has been entered into Entergy's CAP as CR-JAF-2016-00332.

.3 Annual Sample: Two East Crescent Unit Coolers Found to have No Emergency Service Water Flow during Surveillance Testing

a. Inspection Scope

The inspectors performed an in-depth review of Entergy's cause analysis and corrective actions associated with CR-JAF-2014-03121 concerning two of five unit coolers in the

east crescent that were found to have no emergency service water (ESW) flow during performance of surveillance test ST-8Q, “Testing of the Emergency Service Water System (IST).” Specifically, on June 18, 2014, east crescent area unit coolers 66UC-22H and 66UC-22K were discovered to have no ESW flow. This condition was reported to the NRC in accordance with 10 CFR 50.72(b)(3)(v)(D) as a condition that could have prevented fulfillment of the safety function of the HPCI system.

The inspectors assessed Entergy’s problem identification threshold, cause analyses, extent-of-condition reviews, compensatory actions, and the prioritization and timeliness of Entergy’s corrective actions to determine whether Entergy staff was appropriately identifying, characterizing, and correcting problems associated with this issue and whether the planned or completed corrective actions were appropriate. The inspectors compared the actions taken to the requirements of Entergy’s CAP and the plant’s TSs.

b. Findings and Observations

No findings were identified.

The crescent areas house the emergency core cooling system (ECCS) pumps; the west crescent contains the division I pumps plus RCIC (not an ECCS, but does serve as a backup to HPCI), and the east crescent contains the division II pumps plus HPCI. Cooling for each crescent is provided by five unit coolers. The normal source of cooling for these two crescent area ventilation and cooling subsystems is the non-safety class normal service water (NSW) system, with safety class ESW being provided under accident conditions. Technical Requirements Manual (TRM) 3.7.C requires that at least four of the five unit coolers in a crescent area ventilation and cooling subsystem be operable for the subsystem to be considered operable. If this condition is not met, TRM 3.7.C provides an allowed outage time of seven days for operability to be restored. If this cannot be satisfied, then an operability determination must be immediately performed for the affected ECCS subsystems and the RCIC system. Failure to establish ECCS subsystem operability in either crescent would result in entry into TS 3.0.3 which would require the unit to be in hot shutdown within 13 hours and cold shutdown within 37 hours.

During performance of ST-8Q on June 18, 2014, ESW flow to east crescent area unit coolers 66UC-22H and 66UC-22K was found to indicate 0.0 gallons per minute (gpm) each, whereas the expected flow was 25.2 gpm each. As immediate corrective action, the ESW throttle valves for 66UC-22H and 66UC-22K were cycled fully open and closed, then returned to their original positions. In this process, ESW flow was reestablished when the throttle valves were initially opened and, when reset to their original throttled position, ESW flow was slightly higher than the target flow, at 27.0 gpm each.

The apparent cause of this event was that the ESW throttle valves for 66UC-22H and 66UC-22K had been excessively throttled closed during the previous performance of ST-8Q, which had led to an accumulation of debris such as rust, scale, and tubercules that restricted flow. To prevent recurrence, the crescent area unit cooler ESW throttle valves were opened to the maximum extent possible while maintaining balanced ESW flow, to minimize the chance of fouling. ST-8Q was subsequently revised to include this guidance. Additionally, the existing maintenance requirement to flush the crescent area unit cooler ESW throttle valves every six months was modified to also perform a monthly flush of throttle valves that are throttled two turns or less from the closed position. The

operations department also began recording the NSW flow rate through the crescent area unit coolers on a daily basis to provide early indication of flow degradation.

Although the period of time that the no flow condition had existed for 66UC-22H and 66UC-22K could not be definitively established, Entergy engineering performed an evaluation that provided reasonable assurance that the remaining three unit coolers in the east crescent would have been able to remove accident heat loads, based on historical lake water temperatures. With this as the basis, Entergy withdrew the 10 CFR 50.72 notification that had been made to the NRC for this event.

The inspectors reviewed CR-JAF-2014-03121 and the apparent cause evaluation (ACE) for this event. The inspectors determined that Entergy's immediate response to this event was appropriate and promptly reestablished the functionality of the affected unit coolers. Entergy's cause evaluation was reasonable and has been supported by the lack of recurrence since implementation of the associated corrective actions. Although the length of time with two inoperable crescent area unit coolers may have exceeded the TRM allowed outage time, the prompt elimination of the condition upon identification, along with the Engineering evaluation that determined that the east crescent area ventilation and cooling subsystem would have been able to perform its safety function in the as-found condition, supports that such an occurrence would have been a minor issue. The inspectors concluded that Entergy's cause analysis and corrective actions for this event were appropriate.

.4 Annual Sample: 'A' Residual Heat Removal Service Water Piping Keep Full Concerns

a. Inspection Scope

The inspectors performed an in-depth review of Entergy's ACEs and corrective actions associated with several unexpected 'A' RHRSW piping keep full alarms. Specifically, on several occasions in 2014 following RHRSW pump testing, operators received control room alarms indicating that the 'A' RHRSW piping was not maintained full, presenting a potential water hammer concern on a subsequent pump start if not corrected. Operators initiated a CR for each occurrence (CR-JAF-2014-00522, CR-JAF-2014-03138, and CR-JAF-2014-04842).

The inspectors assessed Entergy's problem identification threshold, cause analyses, extent-of-condition reviews, operator actions, and the prioritization and timeliness of corrective actions to evaluate whether Entergy was appropriately identifying, characterizing, and correcting problems associated with these issues and whether the planned and/or completed corrective actions were appropriate. The inspectors compared the actions taken to the requirements of Entergy's operating and alarm response procedures, Entergy's CAP, 10 CFR 50, Appendix B, TS, and the Maintenance Rule. The inspectors interviewed operations and engineering personnel to gain an understanding of potential operational challenges, planned and completed corrective actions, and RHRSW system performance. In addition, the inspectors performed several walkdowns of accessible portions of RHRSW system piping and the associated NSW keep full piping, including associated control room instrumentation and alarm panels, to independently assess the material condition, operating environment, operator awareness and response, and configuration control. The inspectors also observed portions of an annual RHRSW strainer basket internal inspection and Entergy's associated PMT, including operation of the 'A' RHRSW pump, on December 9, 2015.

b. Findings and Observations

No findings were identified.

The safety-related RHRSW system piping is maintained full by a supply from the non-safety-related NSW system between the RHRSW pump discharge check valves (10RHR-14A/C for the 'A' loop, and 10RHR-14B/D for the 'B' loop) and the RHRSW heat exchanger outlet isolation valve (10MOV-89A/B). The keep full supply is designed to maintain the RHRSW piping full to prevent water hammer during a RHRSW pump start. In the event that the RHRSW piping is not maintained full (due to excessive leak-by out of the RHRSW piping between the discharge check valves and the heat exchanger outlet isolation valve and/or issues with the NSW keep full supply), a contact on a RHRSW limit switch (10LS-105A/B) closes which energizes control room alarms (overhead annunciator 09-4-3-4 and digital computer points) alerting operators to the condition.

On January 30, 2014, immediately following an 'A' RHRSW flow surveillance test (ST-2XA), operators received the control room annunciator alarm for RHRSW keep full trouble and promptly initiated CR-JAF-2014-00522. Engineering's troubleshooting and associated equipment ACE (EACE) determined that the most probable cause was blockage in the keep full piping. Entergy's corrective actions included a reverse flow flush of the RHRSW keep full piping and changing the PM frequency (from a three year frequency to a one year frequency) for flushing the 'A' and 'B' RHRSW keep full lines.

On June 18, 2014, immediately following an 'A' RHRSW surveillance test (ST-2AL), operators received the control room annunciator alarm for RHRSW keep full trouble and promptly initiated CR-JAF-2014-03128. Entergy's short-term actions included running the 'A' RHRSW pump temporarily to maintain the system full, performing a RHRSW system fill and vent, additional troubleshooting, and clearing the keep full alarm. Based on the troubleshooting and associated failure modes analysis, engineering determined that the most probable cause of the 'A' RHRSW loop keep full alarm was leak-by of the 'C' discharge check valve (10RHR-14C). Entergy's long-term corrective actions included a planned internal inspection of the 10RHR-14C discharge check valve (CR-JAF-2014-03128, CA-6). On September 2, 2014, Entergy's internal inspection found that the valve had excessive clearance at the hinge pin bore, allowing the disc to move laterally and subsequently leak-by. Entergy replaced the check valve internals via WO 00386462.

On September 3, 2014, operators placed the 'A' and 'C' RHRSW pumps in service as part of the 'A' RHRSW system PMT for WO 00386462. Immediately, after stopping the RHRSW pumps, operators received the control room annunciator alarm for RHRSW keep full trouble and promptly initiated CR-JAF-2014-04842. Entergy troubleshooting determined that the 'A' discharge check valve (10RHR-14A) was leaking by. On September 7, 2014, Entergy's internal inspection found that the disc pin bore had excessive clearance such that the disc was not making 360 degree contact, allowing valve leak-by. Entergy replaced the 10RHR-14A check valve internals via WO 00393013. Entergy's long-term corrective actions included reducing the frequency of the previous PM task to "open/inspect/repair" each of the RHRSW pump discharge check valves (10RHR-14A/B/C/D) on a 12-year frequency to an 8-year frequency (CR-JAF-2014-03128, CA-7).

The inspectors concluded that Entergy had taken timely and appropriate actions in accordance with Entergy's procedures and CAP, TSs, the NRC Maintenance Rule, and 10 CFR 50, Appendix B. The inspectors determined that Entergy's associated ACEs were sufficiently thorough and based on the best available information, sound judgment, and relevant operating experience. Entergy's assigned corrective actions were aligned with the identified causal factors, adequately tracked, appropriately documented, and completed as scheduled. Based on a review of alarm response procedures and CRs, the inspectors determined that operators took prompt and appropriate actions in response to the unexpected RHRSW keep full alarms. Based on the documents reviewed, control room and plant walkdowns, and discussions with engineering and operations personnel, the inspectors noted that the RHRSW keep full issues discussed above did not recur and that Entergy personnel identified problems and entered them into the CAP at a low threshold.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 - 2 samples)

.1 (Closed) Licensee Event Report (LER) 05000333/2015-001-00, COLR [Core Operating Limits Report] Thermal Limits Exceeded With Elevated Fuel Support Piece

During the 2014 refueling outage, FitzPatrick performed a full core off-load to support various in-vessel maintenance activities. A double blade guide (two diagonally adjacent single blade guides connected at the top by a bail handle), used to support a control rod when its four associated fuel assemblies are removed, was installed at fuel cell 38-39 to facilitate this. As in-vessel maintenance progressed, it became necessary to reorient the double blade guide. When this was attempted, the double blade guide was improperly installed in the cell 38-39 fuel support piece (which supports and directs coolant flow through the four fuel assemblies that make up the fuel cell, as well as forming the bottom of the channel for the control rod blade), such that the two elements of the double blade guide were installed face adjacent rather than diagonally adjacent. Since the diagonally adjacent alignment at the top of the double blade guide is maintained by the bail handle, this produced a twist in the double blade guide, which caused the control rod blade channel to be obstructed.

When an attempt was made to insert the control rod, it contacted the double blade guide and began to lift it out of the fuel support piece. Insertion of the control rod blade was stopped and the double blade guide was reinstalled in the correct diagonally adjacent orientation. However, it was not recognized at the time that this event had caused the fuel support piece to become partially unseated (normally connected by a friction fit to the top of the control rod guide tube), such that it was raised by 1.5 inches and rotated by approximately six degrees. The issue was not entered into the CAP, so no further investigation was performed at that time.

This issue evidenced itself during plant operations as a high control rod drive temperature when control rod 38-39 was fully withdrawn. Investigation of the problem led FitzPatrick staff to reexamine the video recording of the core verification that had been performed at the conclusion of the core reload. The review identified that cell 38-39 was elevated by approximately 1.5 inches above the top of the core. The offset fuel support piece caused a reduction in coolant flow through the four fuel assemblies, determined by the vendor to be a reduction of 23.63 percent. This, in turn, caused the thermal limits for the four affected fuel cells to be more restrictive. The vendor determined that the minimum critical power ratio (MCPR) had been less than the

operating limit MCPR for a period longer than allowed by TS on four occasions (during single recirculation loop operations in October 2014). However, the vendor also confirmed that FitzPatrick had complied with the more limiting safety limit MCPR under all evaluated transient conditions, and therefore, that fuel cladding integrity was never challenged. The subject LER was submitted in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by TS.

The inspectors followed the cell 38-39 elevated fuel support piece issue as it developed, as documented in NRC Integrated Inspection Reports 05000333/2015001 and 05000333/2015002. The enforcement aspects of the TS violation are discussed in Section 1R15 of NRC Integrated Inspection Report 05000333/2015001. This LER discusses how the fuel support piece misalignment occurred, as well as identification of the TS violation, which was information that was not yet available at the time that enforcement action was taken. However, this information does not change the previous conclusions and, given the low safety significance of the issue, the inspectors determined that no additional enforcement action was warranted. This LER is closed.

.2 (Closed) LER 05000333/2015-002-00, Safety Relief Valve Upward Setpoint Drift

On June 1, 2015, FitzPatrick personnel determined that the plant had operated during the previous operating cycle (cycle 21) with less than nine operable safety/relief valves (S/RVs) as required by TS 3.4.3, “Safety/Relief Valves.” TS 3.4.3 requires nine operable S/RVs when in Modes 1, 2 or 3. FitzPatrick personnel had removed all 11 S/RV pilot assemblies during the previous refueling outage (R-21) and identified that seven S/RV pilot assemblies had as-found lift set-points above the tolerance limit allowed by TS 3.4.3.1. FitzPatrick staff’s root cause analyses for this and previous S/RV set-point drift issues determined that the most probable cause of the out of tolerance S/RV setpoints was corrosion bonding between the S/RV pilot disc and seat, which has been an industry generic problem.

The inspectors evaluated the safety significance of this event. The S/RVs at FitzPatrick have an Electric Lift System which provides pneumatic pressure to overcome the corrosion bonding to ensure the S/RVs open at or below the TS acceptance criteria. Although this system is not credited in the safety analysis, it had been operable during the entire operating cycle and therefore provided reasonable assurance that the S/RVs would have performed their safety function within TS limits. Additionally, the inspectors noted that the average as-found lift value for all 11 S/RVs was the same as the lift setpoint that was assumed in the cycle 21 reload licensing analysis. This calculation assumed that two of the S/RVs would fail to operate; since all S/RVs were actually operable throughout cycle 21, this assumption is not required. As a result, approximately 22 percent more relieving capacity would have been available, at the same average relief setpoint, as had been used to determine the worst case RPV over-pressurization. Therefore, even without crediting the Electric Lift System, the inspectors concluded that this event had minimal risk significance.

The failure of S/RVs to operate within allowable tolerances describe in this LER constituted a licensee-identified finding involving a violation of TS 3.4.3, “Safety/Relief Valves.” The enforcement aspects of the violation are discussed in Section 4OA7. This LER is closed.

4OA4 Supplemental Inspections

Licensee Strike Contingency Plans (92709)

a. Inspection Scope

The contract between Entergy and the FitzPatrick collective bargaining unit was due to expire during this inspection period. The inspectors evaluated the adequacy of Entergy's strike contingency plan to determine if the required minimum number of qualified personnel were available for the proper operation and safety of the facility, and to determine if the plan complied with TS and CFR requirements. Prior to expiration, a new contract agreement was reached and subsequently ratified.

b. Findings

No findings were identified.

4OA5 Other Activities

.1 Operation of an Independent Spent Fuel Storage Installation at Operating Plants (60855, 60855.1)

a. Inspection Scope

The inspectors evaluated FitzPatrick's activities related to long-term operation and monitoring of their Independent Spent Fuel Storage Installation (ISFSI) and verified that activities were being performed in accordance with the Certificate of Compliance (CoC), TS, regulations, and site procedures.

The inspectors performed tours of the ISFSI pad to assess the material condition of the pad. The inspectors also verified that transient combustibles were not being stored on the ISFSI pad or in the vicinity of the HI-STORMS. The inspectors verified that FitzPatrick was performing daily HI-STORM surveillances in accordance with TS requirements, in addition to the periodic monitoring of the condition of the pad HI-STORM exterior surfaces.

The inspectors interviewed spent fuel group personnel and reviewed FitzPatrick's program associated with fuel characterization and selection for storage from the last ISFSI loading campaign in 2013. The inspectors verified that the criteria meets the conditions for cask and canister use as specified in the CoC. The inspectors also confirmed that physical inventories were conducted annually and were maintained as required by the regulations.

The inspectors reviewed radiological records from the last ISFSI loading campaign to confirm that radiation and contamination levels measured on the casks were within limits specified by the TS and consistent with values specified in the final safety analysis report. The inspectors reviewed radiation protection procedures associated with ISFSI operations. The inspectors also reviewed annual environmental reports to verify that areas around the ISFSI pad and the ISFSI site boundary were within limits specified in 10 CFR 20 and 10 CFR 72.104.

The inspectors reviewed CAP CRs, and the associated follow-up actions associated with ISFSI operations to ensure that issues were entered into the CAP, prioritized, and evaluated commensurate with their safety significance.

b. Findings

No findings were identified.

.2 Construction of an ISFSI at Operating Plants (60853)

a. Inspection Scope

The inspectors conducted an on-site review of FitzPatrick and contractor fabrication activities associated with the expansion of the ISFSI pad at FitzPatrick. The inspectors walked down the construction area, and examined the rebar installation and the concrete formwork installation for depth, straightness, and horizontal bracing for compliance with the licensee-approved drawings. The inspectors interviewed FitzPatrick and contract personnel to verify knowledge of the planned work and appropriate oversight of the construction activities. The inspectors reviewed several concrete truck batch tickets to verify that the concrete delivered to the site met code and specification requirements. The inspectors observed concrete placement, vibration, and finishing for portions of the pad, and observed tests for concrete slump, air content, temperature measurements, and the collection and preparation of cylinder samples for compression tests to verify that the work was implemented according to licensee-approved specifications and referenced industry codes and standards. The inspectors performed a documentation review of the ISFSI pad (EN-QV-102) to verify that Quality Assurance/Quality Control hold points were properly performed during backfill and installation of the ISFSI pad.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On January 26, 2016, the inspectors presented the inspection results to Mr. Brian Sullivan, Site Vice President, and other members of the FitzPatrick staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as a NCV.

- TS 3.4.3 requires that at least nine S/RVs shall be operable in operating modes 1, 2, and 3. Contrary to this, on June 1, 2015, FitzPatrick personnel identified that the plant had operated in these modes during cycle 21 with less than nine operable S/RVs. FitzPatrick personnel documented this condition in CR-JAF-2015-02493.

The inspectors determined this TS violation was of very low safety significance (Green) because it did not result in the loss of the overpressure relief safety function based on operability of the electric lift system.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

B. Sullivan, Site Vice President
C. Adner, Manager, Regulatory Assurance
B. Benoit, Manager, Systems and Components Engineering
W. Drews, Manager, Design and Program Engineering
R. Heath, Manager, Radiation Protection
J. Jones, Manager, Emergency Planning
T. Peter, Director, Regulatory and Performance Improvement
D. Poulin, Director, Engineering
T. Redfearn, Manager, Security
M. Reno, Manager, Training
T. Restuccio, Manager, Operations
S. Vercelli, General Manager, Plant Operations

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Open/Closed

05000333/2015004-01	NCV	Unintended Elevated Plant Risk During EDG Maintenance (Section 1R13)
05000333/2015004-02	NCV	Untimely 10 CFR 50.72 Notification of Inoperable Secondary Containment (Section 1R15)

Closed

05000333/2015-001-00	LER	COLR Thermal Limits Exceeded With Elevated Fuel Support Piece (Section 4OA3)
05000333/2015-002-00	LER	Safety Relief Valve Upward Setpoint Drift (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures
AOP-13, "Severe Weather," Revision 25
AOP-56, "Intake Water Level Trouble," Revision 11
AP-12.04, "Seasonal Weather Preparations," Revision 23
OP-4, "Circulating Water System," Revision 74
OP-15, "High Pressure Coolant Injection," Revision 61
OP-42, "Service Water System," Revision 48
OP-60, "Diesel Generator Room Ventilation," Revision 9

Condition Reports
CR-JAF-2015-04668

Section 1R04: Equipment Alignment

Documents
DBD-13, "Design Basis Document for the Reactor Core Isolation Cooling System," Revision 11

Procedures
ODSO-4, "Shift Turnover and Log Keeping," Revision 117
OP-14, "Core Spray System," Revision 35
OP-19, "Reactor Core Isolation Cooling System," Revision 49
OP-21,"Emergency Service Water (ESW)," Revision 38
OP-22, "Diesel Generator Emergency Power," Revision 60
OP-60, "Diesel Generator Room Ventilation," Revision 8

Drawings
FM-23A, "Flow Diagram Core Spray," Revision 49

Section 1R05: Fire Protection

Documents
JAF-RPT-04-00478, "JAF Fire Hazards Analysis," Revision 1

Procedures
PFP-PWR04, "Battery Room Complex/Elev. 272', 282' Fire Area/Zone III/BR-1, BR-2, IV/BR-3, BR-4, XVI/BR-5," Revision 2
PFP-PWR11, "Cable Spreading Room/Elev. 272' Fire Area/Zone VII/CS-1," Revision 2
PFP-PWR13, "Main Control Room & Control Room HVAC Equipment Rooms/Elev. 300' Fire Area/Zone VII/CR-1, Revision 6
PFP-PWR26, "Reactor Building / Elev. 326' Fire Area/Zone IX/RB-1A," Revision 4
PFP-PWR42, "Turbine Building North / Elev. 252' Fire Area/Zone IE/TB-1," Revision 3
PFP-PWR43, "Turbine Building South / Elev. 252' Fire Area/Zone IE/TB-1," Revision 5
PFP-PWR48, "Turbine Building / Elev. 300' Fire Area/Zone IE/TB-1," Revision 4

Section 1R11: Licensed Operator Requalification Program and Licensed Operator Performance

Procedures
OP-25, "Control Rod Drive Hydraulic System," Revision 86
OP-26, "Control Rod Drive Manual Control System," Revision 25
OP-27, "Recirculation System," Revision 78
OP-65, "Startup and Shutdown Procedure," Revision 120

Section 1R12: Maintenance Effectiveness

Documents
JENG-15-0023, "(A)(1) Evaluation of the "B" RHRSW System," dated September 23, 2015
LO-JAFLO-2015-0006, Corrective actions 256 and 262
System Health Reports for System 10 - RHR and RHRSW, third quarter 2014, second and third quarter 2015

Condition Reports
CR-JAF-2012-04963 CR-JAF-2012-06042 CR-JAF-2012-06091
CR-JAF-2015-03793

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures
AP-10.10, "On-Line Risk Assessment," Revision 9
EN-OP-119, "Protected Equipment Postings," Revision 7
EN-WM-104, "On Line Risk Assessment," Revision 12

Section 1R15: Operability Determinations and Functionality Assessments

Documents
Operator Aggregate Assessment of Plant Deficiencies, performed April 2015
Operator Aggregate Assessment of Plant Deficiencies, performed October 2015
Operator Aggregate Impact Index Performance Indicator for October 2015
WT-WTJAF-2012-00193, corrective actions 73, 74 and 76
JAF-RPT-SGT-02495, "Maintenance Rule Basis Document System 01-125 and 24 Standby Gas Treatment and Secondary Containment," Revision 5

Procedures
AOP-39, "Loss of Coolant," Revision 18
EN-FAP-OP-006, "Operator Aggregate Index Performance Indicator," Revision 2
EN-OP-117, "Operations Assessment Resources," Revision 9
OP-1, "Main Steam System," Revision 57
ST-1Z, "Main Steam Leakage Collection System Monthly Operability Test," Revision 1

Condition Reports
CR-JAF-2015-03958 CR-JAF-2015-03979 CR-JAF-2015-04760
CR-JAF-2015-04376 CR-JAF-2015-05064

Section 1R18: Plant Modifications

Documents
Temporary Modification 59276, "34FWS-16A / 34FWS-16B Seal Welding"
Operational Decision-Making Issue Implementation Action Plan for CR-JAF-2014-06241 and CR-JAF-2014-06738, "34FWS-16A&B Leak"

Procedures
EN-OP-111, "Operational Decision-Making Issue (ODMI) Process," Revision 12

Section 1R19: Post-Maintenance Testing

Procedures
AP-12.06, "Equipment Status Control," Revision 27
MP-056.01, "AC Motor Control Center Maintenance and Subcomponent Replacement," completed 10/21/15
ST-7F, "Standby Gas Treatment Fan B and Valve Exercising," completed October 21, 2015
ST-9BA, "EDG A and C Full Load Test and ESW Pump Operability Test," completed November 5, 2015
ST-9HB, "Standby Liquid Control B Side Quarterly Operability Test (IST)," completed October 22, 2015

Condition Reports
CR-JAF-2015-04686

Work Orders
WO 00341284 WO 00328085 WO 52471315 WO 52467726
WO 52478894

Section 1R22: Surveillance Testing

Procedures
ISP-100D-RPS, "RPS Instrument Functional Test/Calibration (ATTS)**," Revision 40
OP-25, "Control Rod Drive Hydraulic System," Revision 86
ST-1E, "Main Turbine Stop Valves Limit Switch Channel Functional Test," Revision 20
ST-3JB, "Core Spray Initiation Logic System B Functional Test," Revision 4
ST-20C, "Control Rod Operability for Fully Withdrawn Control Rods," Revision 30

Section 2RS1: Access Control to Radiologically Significant Areas

Procedures
EN-RP-101, "Access Control for Radiologically Controlled Areas," Revision 11
EN-RP-105, "Radiological Work Permits," Revision 14
EN-RP-106, "Radiological Survey Documentation," Revision 6
EN-RP-106-01, "Radiological Survey Guidelines," Revision 2
EN-RP-108, "Radiation Protection Posting," Revision 15
EN-RP-110-04, "Radiation Protection Risk Assessment Process," Revision 5
EN-RP-121, "Radioactive Material Control," Revision 11
EN-RP-123, "Radiological Controls for Highly Radioactive Objects," Revision 1
RP-OPS-02.05, "Response to Notifications and Alarms," Revision 13
RP-OPS-03.05, "Refuel Floor and Drywell Radiological Controls," Revision 16

Radiation Work Permits
2015-0270, "Remove/Replace 12P-1B"
2015-0202, "Reline Condensate Demineralizer Tanks 33D-UF and 33D-UG"

Section 2RS3: In-plant Airborne Radioactivity Control and Mitigation

Procedures
EN-RP-122, "Alpha Monitoring," Revision 8
EN-RP-131, "Air Sampling," Revision 13
EN-RP-309, "Operation and Calibration of the Eberline AMS-3 and AMS-3A Continuous Air Monitor," Revision 1
EN-RP-310, "Operation and Initial Setup of the Eberline AMS-4 Continuous Air Monitor," Revision 4
EN-RP-402, "DOP Challenge Testing of HEPA Vacuums and Portable Ventilation Units," Revision 4
EN-RP-404, "Operation and Maintenance of HEPA Vacuum Cleaners and HEPA Ventilation Units," Revision 6

Section 2RS4: Occupational Dose Assessment

Documents
RTID-05-001, "Evaluation of the Thermo Eberline PM7 Portal Monitor Response to Internal Radioactive Material," Revision 1
RTID-99-007, "Evaluation of Whole Body Contamination Monitor Response to Internal Radioactive Material," Revision 2

Procedures
EN-RP-110-04, "Radiation Protection Risk Assessment Process", Revision 5
EN-RP-122, "Alpha Monitoring", Revision 8
EN-RP-203, "Dose Assessment", Revision 7
EN-RP-208, "Whole Body Counting / In-Vitro Bioassay", Revision 6

Condition Reports

CR-JAF-2015-04144	CR-JAF-2015-04274	CR-JAF-2015-04795
CR-JAF-2015-04263	CR-JAF-2015-04298	CR-JAF-2015-04801
CR-JAF-2015-04264	CR-JAF-2015-04675	CR-JAF-2015-04937

Section 4OA1: Performance Indicator Verification

EN-LI-114, "Performance Indicator Process," Revision 6
JAF-RPT-05-00047, "Mitigating System Performance Index (MSPI) Basis Document," Revision 4

Section 4OA2: Problem Identification and Resolution

Documents
DBD-010, "Residual Heat Removal System Design Basis Document," Revision 13
DBD-046, "Normal Service Water, Emergency Service Water, and RHR Service Water Design Basis Document," Revision 19
CR-JAF-2010-01072 CA-2, "RHR Service Water Loop A Keep Full Service Water Supply Check Valve Apparent Cause Evaluation Report," dated April 1, 2010

CR-JAF-2012-03900 CA-1, “Pressure Switch 10PS-124B and Level Switch 10LS-105B Alarmed Failure Mode Analysis,” dated October 23, 2012
CR-JAF-2013-04247 CA-1, “EPIC-D-218 (RHR Keep Full Alarm) Failure Mode Analysis,” dated August 30, 2013
CR-JAF-2014-00160 CA-1, “Service Water Strainer A DP Alarm in Continuously with Strainer Backwashing Failure Mode Analysis,” dated February 5, 2014
CR-JAF-2014-00522 CA-4, “'A RHRSW Discharge Piping Not Full' Control Room Alarm (09-4-3-4) Was Received within One Minute of System Shutdown Equipment Apparent Cause Evaluation Report,” dated April 7, 2014
CR-JAF-2014-00735 CA-1, B RHRSW Pump Keep Full Alarm Equipment Failure Evaluation Report, dated March 3, 2014
CR-JAF-2014-03128 CA-1, “'A' RHRSW Keep Full Alarm Received Following Shutdown of 10P-1A (‘A’ RHRSW Pump) Equipment Apparent Cause Evaluation Report, dated September 23, 2014
10CFR 50.65(a)(3) Periodic Assessment November 2011 to October 2013, dated January 15, 2014
386462-01 (10RHR-14C) Foreign Material Exclusion Requirements FME Plan, dated September 1, 2014
AR 00206478, (CAP) Change RHRSW Check Valve PMs (10RHR-14A, B, C, D), dated August 11, 2014
CR-JAF-2012-04963 CA-13, CA Due Date Extension Evaluation, dated September 25, 2014
JGATT-OPS-10MOV89B-SEP2015, “JITT for 10MOV-89B Degradation,” Revision 0
PMRQs: 50048108-03, 50048109-03, 50048110-02 and 50048111-03
RHR and RHRSW System Health Reports, second and third quarter 2015

Procedures
AP-12.15, “Control of Time Critical Operator Actions,” Revision 2
ARP 09-4-3-4, “RHRSW A or B Disch Line Not Full,” Revision 5
EN-LI-102, “Corrective Action Program,” Revision 25
EN-LI-118, “Cause Evaluation Process,” Revision 22
EN-LI-121, “Trending and Performance Review Process,” Revision 18
EN-OP-104, “Operability Determination Process,” Revision 10
MP-059.12, “Swing Check Valves without Operators (ISI)*,” Revision 22
OP-13A, “RHR - Low Pressure Coolant Injection,” Revision 17
OP-13C, “RHR Service Water,” Revision 13
ST-2AL, “RHR Loop A Quarterly Operability Test (IST),” Revision 35
ST-2XA, RHR Service Water Loop A Quarterly Operability Test (IST),” Revision 13

Completed Procedures
MP-059.12, “Swing Check Valves without Operators (ISI)*,” performed September 1, 2014 and September 7, 2014
ST-2AL, “RHR Loop A Quarterly Operability Test (IST),” performed September 8, 2015
ST-2AN, “RHR Loop A Monthly Operability Test,” performed November 13, 2015
ST-2AO, “RHR Loop B Monthly Operability Test,” performed November 22, 2015
ST-2XA, “RHR Service Water Loop A Quarterly Operability Test (IST),” performed September 9, 2015
ST-40K, “Periodic Tests and Inspections,” performed December 6, 2015

Drawings
FM-20B, “Residual Heat Removal System 10 Flow Diagram,” Revision 72

Condition Reports

CR-JAF-2009-01041	CR-JAF-2014-01885	CR-JAF-2015-04655
CR-JAF-2010-01072	CR-JAF-2014-01958	CR-JAF-2015-04697
CR-JAF-2012-03900	CR-JAF-2014-02389	CR-JAF-2015-04731
CR-JAF-2012-08610	CR-JAF-2014-02961	CR-JAF-2015-04739
CR-JAF-2012-08878	CR-JAF-2014-03128	CR-JAF-2015-04779
CR-JAF-2012-08898	CR-JAF-2014-04842	CR-JAF-2015-04825
CR-JAF-2013-00512	CR-JAF-2014-04870	CR-JAF-2015-04880
CR-JAF-2013-02279	CR-JAF-2014-05269	CR-JAF-2015-04893
CR-JAF-2013-04247	CR-JAF-2014-06322	CR-JAF-2015-04938
CR-JAF-2013-04249	CR-JAF-2015-02121	CR-JAF-2015-05001
CR-JAF-2013-04343	CR-JAF-2015-02774	CR-JAF-2015-05002
CR-JAF-2013-05705	CR-JAF-2015-03793	CR-JAF-2015-05103
CR-JAF-2014-00160	CR-JAF-2015-04198	CR-JAF-2015-05121
CR-JAF-2014-00378	CR-JAF-2015-04227	CR-JAF-2015-05125
CR-JAF-2014-00522	CR-JAF-2015-04230	CR-JAF-2015-05147
CR-JAF-2014-00544	CR-JAF-2015-04249	CR-JAF-2015-05304
CR-JAF-2014-00652	CR-JAF-2015-04387	CR-JAF-2015-05312
CR-JAF-2014-00695	CR-JAF-2015-04466	CR-JAF-2015-05321
CR-JAF-2014-00735	CR-JAF-2015-04557	CR-JAF-2015-05360
CR-JAF-2014-01205	CR-JAF-2015-04591	
CR-JAF-2014-01280	CR-JAF-2015-04600	

Work Orders

WO 00386462	WO 00388736	WO 00393013	WO 50048117
WO 50048118	WO 51180147	WO 51182188	WO 51184902
WO 52617061			

Section 4OA5: Other Activities

Documents

Attachment 9.5, “ICA Inventory Account Form,” December 20, 2013
Annual HI-STORM Tech Spec Surveys performed February 4, 2015
Concrete Batch Ticket Control Number 313714 on October 6, 2015
Concrete Batch Ticket Control Number 313756 on October 6, 2015
Concrete Batch Ticket Control Number 325504 on October 6, 2015
EN-QV-102 Attachment 9.1 Inspection Report for Work Order 00396382-23
Fall Line Test Data, JAF ISFSI Project Mix Design L585.R1, October 6, 2015
Fuel Selection for Holtec Dry Cask Storage, Cask #21 MPC 420, dated November 19, 2013
JAF-1320-0184 Cask 16
JAF-1311-0006 Cask 17
JAF-1311-1174 Cask 18
JAF-1311-0132 Cask 19
JAF-1311-0208 Cask 20
JAF-1312-0002 Cask 21
JAF-RPT-SFS-04329, “Independent Spent Fuel Storage Installation 10 CFR 72.212 Evaluation Report,” Revision 8
ISFSI Pad Environmental Surveys performed February 4, 2015:
JAF-1208-0298, JAF-1208-0305, JAF-1209-0013, JAF-1311-0206, JAF-1311-0053
ISFSI Pad Environmental Survey JAF-1507-0050 performed September 29, 2015
Figure 3.3-3, “Onsite Environmental Station and TLD locations”

Figure 3.2-2, “Offsite Environmental Station and TLD locations”
Environmental Monitoring and TLD Results, November 4, 2014
Report and Certificate of Calibration 53736-F-03 Asset #5002, dated September 29, 2015
Report and Certificate of Calibration 53736-F-16 Asset #1884, dated September 29, 2015
Report and Certificate of Calibration 53736-F-26, Asset #2033, dated October 2, 2015
Riccelli Northern Mix Design, Mix ID: L585.R1, dated September 28, 2015
SPEC-15-00002-F, “Construction Specification for the ISFSI Expansion Concrete Storage Pad,” Revision 1
RWP 2015-0004
RWP 2013-0022

Procedures
EN-DC-211, “Dry Fuel Storage Management," Revision 1
EN-DC-215, “Fuel Selection for Holtec Dry Cask Storage,” Revision 4
EN-NF-200, “Special Nuclear Material Control,” Revision 13
EN-RP-108, “Radiation Protection Posting,” Revision 15
EN-RP-113, “Response to Contaminated Spills/Leaks,” Revision 8
EN-RP-121, “Radioactive Material Control,” Revision 11
MP-019.03, “HI-TRAC Handling and Storage,” Revision 6
MP-019.07, “MPC Transfer and HI-STORM Movement,” Revision 23
MP-019.13, “HI-STORM Overpack Annual Inspection,” Revision 5
MP-019.16, “ISFSI Emergency Handling and Storage Abnormal Conditions,” Revision 0
ST-32B, “Overpack Heat Removal System Operability Test,” Revision 8

Drawings
Drawing Number 10.15-55, “Grounding and Fence Layout Plan ISFSI,” Revision 1
Drawing Number 10.15-81, “Layout Plan ISFSI Expansion Temperature Monitoring System Conduit and RTD Details,” Revision 1
Drawing Number 10.15-82, “Plan Sections and Details Temperature Monitoring System ISFSI Expansion,” Revision 1
Drawing Number 10.15-83, “ISFSI Expansion Pad Detail,” Revision 0

Condition Reports

CR-JAF-2013-00760	CR-JAF-2014-01257	CR-JAF-2015-04405
CR-JAF-2013-00271	CR-JAF-2014-04258	CR-JAF-2015-04483
CR-JAF-2013-05715	CR-JAF-2014-05169	CR-JAF-2015-04479
CR-JAF-2013-05775	CR-JAF-2014-07042	CR-JAF-2015-04498
CR-JAF-2013-05756	CR-JAF-2015-00089	CR-JAF-2015-04499
CR-JAF-2014-00170	CR-JAF-2015-04013	
CR-JAF-2014-01010	CR-JAF-2015-04090	

Work Orders
WO 52353983, “2013 Annual Inspection of HI-STORM Canisters”
WO 52467762, “2014 Annual Inspection of HI-STORM Canisters”
WO 52555373, “2015 Annual Inspection of HI-STORM Canisters”
WO 00396382, “EC 51181, Concrete/Backfill New ISFSI Pad”

LIST OF ACRONYMS

10 CFR	Title 10 of the *Code of Federal Regulations*
ACE	apparent cause evaluation
ALARA	as low as is reasonably achievable
APRM	Aggregate Performance Review Meeting
CAP	corrective action program
CoC	Certificate of Compliance
CR	condition report
EACE	equipment apparent cause evaluation
ECCS	emergency core cooling system
EDG	emergency diesel generator
ESW	emergency service water
HPCI	high pressure coolant injection
IMC	Inspection Manual Chapter
ISFSI	independent spent fuel storage installation
kV	kilovolt
LER	licensee event report
M&TE	maintenance and test equipment
MCPR	minimum critical power ratio
MSPI	mitigating systems performance index
NCV	non-cited violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission, U.S.
NSW	normal service water
PI	performance indicator
PM	preventive maintenance
PMT	post-maintenance test
RCIC	reactor core isolation cooling
RG	Regulatory Guide
RHR	residual heat removal
RHRSW	residual heat removal service water
RPS	reactor protection system
RPV	reactor pressure vessel
S/RV	safety relief valve
SL	severity level
SSC	structure, system, and component
TRM	Technical Requirements Manual
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
WO	work order