UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

August 13, 2010

Mr. Peter T. Dietrich
Site Vice President
Entergy Nuclear Northeast
James A. FitzPatrick Nuclear Power Plant
Post Office Box 110
Lycoming, NY 13093

SUBJECT: JAMES A. FITZPATRICK NUCLEAR POWER PLANT - NRC COMPONENT DESIGN BASES INSPECTION REPORT 05000333/2010006

Dear Mr. Dietrich:

On July 1, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the James A. FitzPatrick Nuclear Power Plant. The enclosed inspection report documents the inspection results, which were discussed with you and other members of your staff on July 1, 2010.

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. In conducting the inspection, the team examined the adequacy of selected components and operator actions to mitigate postulated transients, initiating events, and design basis accidents. The inspection involved field walkdowns, examination of selected procedures, calculations and records, and interviews with station personnel.

This report documents three NRC-identified findings that were of very low safety significance (Green). All of the findings were determined to involve a violation of NRC requirements. However, because of the very low safety significance of the violations and because they were entered into your corrective action program, the NRC is treating these violations as a non-cited violations (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV 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 U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the FitzPatrick plant. 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 the FitzPatrick plant.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for the public inspection in the NRC Public Docket Room or from the Publicly Available Records component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

Lawrence T. Doerflein

Lawrence T. Doerflein, Chief
Engineering Branch 2
Division of Reactor Safety

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

Enclosure: Inspection Report 05000333/2010006
w/Attachment: Supplemental Information

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/RA/
Lawrence T. Doerflein, Chief
Engineering Branch 2
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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 50-333

License No.: DPR-59

Report No.: 05000333/2010006

Licensee: Entergy Nuclear Northeast (Entergy)

Facility: James A. FitzPatrick Nuclear Power Plant

Location: Scriba, New York

Dates: June 7, 2010 – July 1, 2010

Inspectors: K. Mangan, Senior Reactor Inspector, Division of Reactor Safety (DRS), Team Leader
J. Schoppy, Senior Reactor Inspector, DRS
D. Orr, Senior Reactor Inspector, DRS
P. McKenna, Reactor Inspector, DRS
T. Tinkel, NRC Mechanical Contractor
G. Skinner, NRC Electrical Contractor

Approved by: Lawrence T. Doerflein, Chief
Engineering Branch 2
Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000333/2010006; 06/07/2010 – 07/01/2010; James A. FitzPatrick Nuclear Power Plant; Component Design Bases Inspection.

The report covers the Component Design Bases Inspection conducted by a team of four NRC inspectors and two NRC contractors. Three findings of very low risk significance (Green) were identified, all of which were considered to be non-cited violations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using NRC Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Cross-cutting aspects associated with findings are determined using IMC 0310, "Components Within the Cross-Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The team identified a finding involving a non-cited violation of James A. FitzPatrick Technical Specification (TS) Surveillance Requirement (SR) 3.8.1.8 because Entergy did not adequately perform the largest post-accident load rejection test as required by the SR. Specifically, Entergy's surveillance test that implemented this SR rejected a load of about 1000 brake horse power (BHP) and the largest post-accident load calculated by Entergy was 1270 BHP. Entergy entered this issue into their corrective action program to evaluate operability of each emergency diesel generator (EDG) subsystem and to correct the surveillance test for rejection of the largest post-accident load. The team reviewed Entergy's operability determination and concluded it appropriately determined the EDG subsystems were operable but non-conforming to SR 3.8.1.8.

  This finding is more than minor because it is associated with the Procedure Quality Attribute (maintenance and testing) of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating event to prevent undesirable consequences. The team performed a Phase 1 SDP screening, in accordance with NRC IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," and determined the finding was of very low safety significance (Green) because it was a qualification deficiency confirmed not to result in loss of operability. The team did not identify a cross-cutting aspect associated with the finding. (1R21.2.1.1)

- Green. The team identified a finding involving a non-cited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," in that Entergy did not verify the adequacy of design with respect to establishing the basis for the offsite power minimum voltage and the degraded voltage relay reset setpoint. Specifically, Entergy failed to adequately evaluate the results of load flow studies that determined safety bus voltage would be below the relay reset value following some design basis events. The team concluded that this could result in separation of the vital busses from the offsite power supply during some design basis events. Entergy entered this issue in the corrective action program to verify offsite power was operable, and instructed the offsite grid operator to raise the minimum grid voltage limit and revise the post accident grid loading profile.

The finding is more than minor because it is associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team determined the finding was of very low safety significance (Green) because it was a design deficiency confirmed not to result in a loss of the offsite power supply operability or functionality.

This finding had a cross-cutting aspect in the area of Human Performance Resources because the licensee did not ensure that personnel, equipment, procedures, and other resources are available to ensure complete, accurate and up-to-date design documentation. Specifically, the acceptance criteria in the recently completed calculations that evaluated the offsite power voltage limit was not correct which resulted in an incorrect evaluation of the results of the calculation. (IMC 0310, Section H.2(c)) (1R21.2.1.2)

- Green. The team identified a finding involving a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," for failure to identify and correct a condition adverse to quality. Specifically, Entergy did not take corrective actions to evaluate the rate of identified degradation on the 10S-5B1 residual heat removal service water (RHRSW) strainer casing. This resulted in a through wall leak in the strainer which was identified by the team. The team's review found that in 2006 Entergy had conducted ultrasonic test (UT) measurements of the strainer and determined that degradation was occurring. Corrective actions for the deficiency required that a UT examination be performed to monitor for further degradation but it was not performed. In response, Entergy entered the issue into the corrective action program, and conducted an UT examination at the leak location to determine the size and extent of the defect which determined that strainer's structural integrity was maintained.

  The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team determined the finding was of very low safety significance (Green) because the finding was determined to be a qualification deficiency confirmed not to result in loss of operability.

  This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program Component, because Entergy did not take appropriate corrective actions to address safety issues in a timely manner. Specifically, Entergy did not take action to determine the degradation rate of the 10S5B1 RHRSW strainer which resulted in a through wall leak. (IMC 0310, Aspect P.1 (d)) (1R21.2.1.3)

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R21 Component Design Bases Inspection (IP 71111.21)

.1 Inspection Sample Selection Process

The team selected risk significant components and operator actions for review using information contained in the James A. FitzPatrick Nuclear Power Plant (FitzPatrick), Probabilistic Safety Assessment and the U.S. Nuclear Regulatory Commission's (NRC) Standardized Plant Analysis Risk (SPAR) model. Additionally, the FitzPatrick Significance Determination Process (SDP) Phase 2 Notebook (Revision 2.1a) was referenced in the selection of potential components and operator actions for review. In general, the selection process focused on components and operator actions that had a Risk Achievement Worth (RAW) factor greater than 1.3 or a Risk Reduction Worth (RRW) factor greater than 1.005. The components selected were located within both safety-related and non-safety related systems, and included a variety of components such as pumps, breakers, heat exchangers, transformers, and valves.

The team initially compiled a list of components and operator actions based on the risk factors previously mentioned. Additionally, the team reviewed the previous component design bases inspection report (05000333/2007006) and excluded those components previously inspected. The team then performed a margin assessment to narrow the focus of the inspection to 16 components, four operator actions and four operating experience items. The team's evaluation of possible low design margin included consideration of original design issues, margin reductions due to modifications, or margin reductions identified as a result of material condition/equipment reliability issues. The assessment also included items such as failed performance test results, corrective action history, repeated maintenance, maintenance rule (a)(1) status, operability reviews for degraded conditions, NRC resident inspector insights, system health reports, and industry operating experience. Finally, consideration was also given to the uniqueness and complexity of the design and the available defense-in-depth margins. The margin review of operator actions included complexity of the action, time to complete the action, and extent-of-training on the action.

The inspection performed by the team was conducted as outlined in NRC Inspection Procedure (IP) 71111.21. This inspection effort included walkdowns of selected components, interviews with operators, system engineers and design engineers, and reviews of associated design documents and calculations to assess the adequacy of the components to meet design basis, licensing basis, and risk-informed beyond design basis requirements. Summaries of the reviews performed for each component, operator action, operating experience sample, and the specific inspection findings identified are discussed in the subsequent sections of this report. Documents reviewed for this inspection are listed in the Attachment.

.2 Results of Detailed Reviews

.2.1 Results of Detailed Component Reviews (16 samples)

.2.1.1 "B" Emergency Diesel Generator (Electrical)

a. Inspection Scope

The team inspected the "B" emergency diesel generator (EDG) to verify that it was capable of meeting its design basis requirements. The team reviewed "B" EDG control and protective relay preventive maintenance activities and calibrations for selected relays to verify that the "B" EDG would operate reliably and was not subject to spurious trips. The team reviewed the EDG relay logic to determine if protective functions were retained or bypassed during emergency operation as described in the license bases. The team also verified that the bypass features were routinely tested and the most recent test results demonstrated satisfactory operation. The team reviewed static loading calculations to determine whether expected worst case loading was within the rated capabilities of the engine and generator. Technical specification (TS) surveillances that demonstrated the dynamic and full load capabilities of the EDG, as well as load shedding and load sequencing were reviewed against TS surveillance requirements and established acceptance criteria to verify the results were satisfactory. The team reviewed voltage drop calculations for EDG support systems and control circuits to determine whether adequate voltage was available to support the loads under degraded voltage conditions and maintain the EDG in a state of readiness.

The team reviewed a 'B' EDG modification that addressed obsolescence issues with the 93-K1-1EDGB12 latching relay, speed switch, and speed switch power supply. The team verified that the new components were rated by the vendor to operate under worst case design conditions such as temperature and voltage, and that all component attributes were equivalent or superior to the original components. The team also reviewed corrective action documents and system health reports and interviewed the system engineer to determine whether there were any adverse operating trends or existing issues affecting EDG reliability. Finally, the team performed a visual examination of the EDG to assess material condition and the presence of potential hazards to the EDG or its support systems.

b. Findings

Introduction: The team identified a finding of very low safety significance (Green) involving a non-cited violation of FitzPatrick Technical Specification (TS) Surveillance Requirement (SR) 3.8.1.8. Specifically, the team found that Entergy did not adequately perform the load rejection test with the largest post-accident load as required by the SR.

Description: The team reviewed TS SR 3.8.1.8 and determined that every 24 months Entergy was required to verify each EDG subsystem rejects a load greater than or equal to its associated single largest post-accident load and, following load rejection, the EDG frequency is ≤ 66.75 hertz. Entergy surveillance test ST-9C, Emergency AC Power

Load Sequencing Test and 4KV Emergency Power System Voltage Relays Instrument Functional Test, was performed to meet the SR and provided instructions to perform the load reject test by tripping a core spray pump operating at 4265 gallons per minute (gpm). The team questioned Entergy if the core spray pump operating under those conditions would provide a reject load greater than or equal to the largest post-accident load. The team reviewed the SR 3.8.1.8 basis and noted that the largest single load for each EDG subsystem was a core spray pump. This statement in the TS basis was immediately followed with "(1250BHP)." The team additionally questioned Entergy if during a design-break loss of coolant accident if a core spray pump would operate at 1250 BHP.

Entergy calculated the BHP for the surveillance test conditions and determined the corresponding core spray pump power to be approximately 1000 BHP. The team reviewed calculation JAF-CALC-EDG-03358, JAF - Single EDG Loading Calculation, dated August 14, 1999, and determined the core spray motor load at the surveillance flow rate to be approximately 1027 BHP. The team also reviewed the Core Spray Pump Test Curve, dated May 5, 1971, to estimate the surveillance core spray pump power using pump load analytical methods and estimated the motor load to be 1044 BHP. Additionally, the team noted that in JAF-CALC-EDG-003358 Entergy had concluded that the core spray pump power post-accident for a design break LOCA would be 1270 BHP 120 seconds into the accident. The team found that in all cases, the load rejected during the surveillance test conditions was less than calculated post-accident load and, therefore, the SR was not satisfied.

Based on the above, Entergy initially entered SR 3.0.3 for a missed surveillance. The team discussed the issue with the Technical Specifications Branch and the Division of Operating Reactor Licensing in the Office of Nuclear Reactor Regulation (NRR) and determined that it was not appropriate to enter SR 3.0.3 for a surveillance test had never been completed in accordance with the surveillance requirements. Following discussions with team, Entergy entered SR 3.0.1. Entergy also entered this issue into their corrective action program on July 1, 2010 as condition report (CR) CR-JAF-2010-03689, to evaluate operability of each EDG subsystem and to correct the surveillance test for rejection of the largest post-accident load. The team reviewed Entergy's operability determination and concluded it appropriately determined the EDG subsystems were operable but non-conforming to SR 3.8.1.8. Entergy's operability basis was in part supported by past successful performance of load reject tests near 80% of the SR load value which demonstrated significant margin to ≤ 66.75 hertz.

Analysis: The team determined that the failure to adequately implement TS SR 3.8.1.8 was a performance deficiency. Specifically, Entergy's implementing surveillance procedure established the load reject at about 80% of the single largest post-accident load. The team concluded that this performance deficiency was reasonably within Entergy's ability to foresee and prevent. The finding is more than minor because it is associated with the Procedure Quality Attribute (maintenance and testing) of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team performed a Phase 1 SDP screening, in accordance with NRC IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," and determined the finding was of very low safety significance (Green) because it was a qualification deficiency confirmed not to result in loss of operability.

The team did not identify a cross-cutting aspect associated with the finding because the performance deficiency occurred during the historical development of ST-9C, Emergency AC Power Load Sequencing Test and 4KV Emergency Power System Voltage Relays Instrument Functional Test. The team determined there was not a reasonable opportunity to identify the deficiency during the recent past. Therefore, the issue was determined not to be indicative of current licensee performance.

Enforcement. James A. FitzPatrick Technical Specification SR 3.8.1.8 requires that Entergy verify, every 24 months, each EDG subsystem rejects a load greater than or equal to its associated single largest post-accident load and, following load rejection, the EDG frequency is ≤ 66.75 hertz. Contrary to SR 3.8.1.8, from initial plant startup to July 1, 2010, Entergy failed to meet SR 3.8.1.8 because the load rejected during the SR was less than the single largest post-accident load. Specifically, Entergy's implementing procedure only performed a load rejection test at about 80% of the largest post-accident load. Because this finding was of very low safety significance and was entered into the corrective action program (CR-JAF-2010-03689), this violation was treated as a non-cited violation, consistent with Section VI.A of the NRC Enforcement Policy. **(NCV 05000333/2010006-01, Failure to Use Largest Load During EDG Reject Surveillance Test)**

.2.1.2 4160Vac Bus 10600 (71H06)

a. Inspection Scope

The team inspected the 4160Vac Bus 10600 to verify that it was capable of meeting its design basis requirements. The team reviewed applicable portions of the UFSAR, the design basis document (DBD), and drawings to identify the design basis requirements for the bus. The team reviewed the design of the 4160Vac bus degraded voltage protection scheme to determine whether it afforded adequate voltage to safety related devices at all voltage distribution levels. This review included the degraded voltage relay setpoint calculations, motor starting and running voltage calculations, and motor control center (MCC) control circuit voltage drop calculations.

The team reviewed procedures and completed surveillances for calibration of the degraded voltage relays to determine whether acceptance criteria were consistent with design calculations, and to determine whether the relays were performing satisfactorily. The team also reviewed schematic diagrams and calculations for 4160Vac bus protective relays to ensure that equipment was adequately protected, loads were not subject to spurious tripping, and to determine whether proper breaker coordination was maintained. In addition, the team reviewed bus loading calculations to determine whether the 4160Vac bus and breakers were applied within their specified capacity ratings under worst case accident loading and grid voltage conditions. Short circuit calculations were also reviewed to determine whether the bus and its circuit breakers were applied within their specified design ratings.

The team reviewed operating procedures to determine whether the limits and protocols for maintaining offsite voltage were consistent with design calculations and reviewed Entergy's response to NRC Generic Letter 2006-02 to determine whether the procedures were consistent with licensee responses. Additionally, the team reviewed corrective action histories to determine whether there had been any adverse operating trends and to determine if deficiencies were being identified and corrected. Finally, the team performed a visual inspection of the bus to assess material condition and operating environment of the equipment.

b. Findings

Introduction: The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," in that Entergy did not verify the adequacy of design with respect to establishing the basis for the offsite power minimum voltage and degraded voltage relay reset setpoint. Specifically, Entergy failed to adequately evaluate the results of load flow studies that determined safety bus voltage levels would be below that required to prevent spurious separation from the offsite power supply.

Description: The team reviewed surveillance procedure ISP-90-1 which was performed to verify the settings of the degraded grid relay trip and reset setpoints. The team determined that the as-left relay reset setting for these relays was between 3885Vac and 3906Vac on the 4kv vital bus. Additionally, the team noted that based on calculation JAF-CALC-ELEC-01488, the actual reset value could be as high as 3920Vac when additional tolerances were considered. The team inspected the adequacy of the degraded grid relay settings by reviewing two calculations performed by Entergy to evaluate the adequacy of the relay settings.

The team reviewed calculation JAF-CALC-09-00016 which performed several load flow cases in order to evaluate electrical system performance. Two of the cases performed in the calculation (22.12 and 22.13) evaluated post event safety bus voltages for scenarios involving maximum steady state accident loading concurrent with minimum expected 115kV switchyard (offsite power) voltage of 112kV. Case 22.12 determined the 10500 4kV vital bus steady state voltage would be 93.76%, or 3900V, while Case 22.13 showed the 10600 4kv vital bus steady state voltage would be 93.59%, or 3894Vac. Additionally, the team reviewed calculation 14620-9016-2 which had also evaluated post accident 4kv vital bus voltage levels. The team found this calculation concluded that a switchyard voltage of 112kV would result in a final steady state bus voltage of 3920V.

The team's review of the two calculations determined that the difference between them was the loading used for non-safety buses. Calculation JAF-CALC-09-00016 used worst case loads assuming switchable loads were aligned to the train under analysis. This resulted in an approximately 1.17MVa higher loading. The team determined that this loading profile would not occur frequently, but in the absence of specific administrative controls restricting loading, was appropriate. The team also noted Entergy had two different acceptance criteria for adequate final bus voltage. Calculation JAF-CALC-09-00016 acceptance criteria was based on the final steady state bus voltage of 3829Vac being above the degraded grid relay minimum drop out value and calculation 14620-9016-2 acceptance criteria required the final voltage be greater than 3920Vac which was the maximum reset value of the relay.

Since the post accident recovery voltages of 3900Vac and 3894Vac shown in Calculation JAF-CALC-09-00016 were below the possible reset voltage of 3920Vac as allowed by the surveillance procedure, the team requested Entergy evaluate if the safety buses could spuriously separate from offsite power during an accident while switchyard voltage was within its expected range (≥ 112kV). Entergy determined that, during load sequencing, the degraded voltage relays would drop out during voltage dips associated with starting of large emergency core cooling system (ECCS) motors and, therefore, 4kv voltage needed to recover to above the reset setpoint of the degraded grid relays in order to prevent spurious separation from the offsite power supply.

Entergy entered the issue into its corrective action program. They requested the grid operator increase the setpoint for the offsite power low voltage contingency alarm from 112kV to 112.8kV, and revise the loading profile used by the grid operator in their contingency model for a loss-of-coolant accident (LOCA). These actions were considered appropriate and sufficient to address the immediate concerns raised by the team. Finally, the team reviewed a study performed by Entergy which used the higher LOCA loading and current grid conditions to show offsite power was operable at the time of the inspection. The team found the basis for Entergy's conclusion to be reasonable and technically supported.

Analysis: The team determined that the failure to properly evaluate the results of load flow studies that revealed unacceptable safety bus voltage was a performance deficiency that was reasonably within Entergy's ability to foresee and prevent. The finding was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This issue was also similar to Example 3j of NRC IMC 0612, Appendix E, "Examples of Minor Issues," because the condition resulted in reasonable doubt of the operability of the offsite power source and additional analysis was necessary to verify operability. The team performed a Phase 1 screening in accordance with IMC 0609.04, "Initial Screening and Characterization of Findings," and determined the finding to be of very low safety significance (Green) because further analysis determined that the issue was a design or qualification deficiency confirmed not to result in a loss of the offsite power supply operability or functionality.

This finding had a cross-cutting aspect in the area of Human Performance Resources because the licensee did not ensure that personnel, equipment, procedures, and other resources are available to ensure complete, accurate and up-to-date design documentation. Specifically, the acceptance criteria in the recently completed calculations that evaluated the offsite power voltage limit was not correct which resulted in an incorrect evaluation of the results of the calculation (IMC 0310, Section H.2(c)).

Enforcement: 10 CFR 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures be provided for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program. Contrary to the above, as of June 7, 2010, Entergy's design control measures did not verify the adequacy of design with respect to establishing the bases for the offsite power minimum voltage level and the degraded voltage relay reset setpoint. Specifically, the licensee did not properly evaluate load flow calculation results that showed unacceptable bus voltages. Because this violation is of very low safety significance and has been entered into Entergy's corrective action program (CR-JAF-2010-03246 and CR-JAF-2010-03421), it is being treated as a non-cited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. **(NCV 05000333/2010006-02, Calculations for Offsite Power Availability)**

.2.1.3 Residual Heat Removal Service Water Twin Strainers (10S-5B)

a. Inspection Scope

The team inspected the "A" residual heat removal service water (RHRSW) system twin strainers to verify that they were capable of operating in accordance with their design basis requirements. The team reviewed applicable portions of the Updated Final Safety Analysis Report (UFSAR), the DBD, and drawings to identify the design basis requirements for the strainer. The team determined the RHRSW strainers were designed to remove entrained particulates from the RHRSW flow stream to prevent potential clogging or damaging the RHRSW heat exchangers and also ensure adequate flow to the RHRSW heat exchangers under both normal and accident mitigating conditions.

The team reviewed design calculations to verify the adequacy of the strainer design for differential pressure limits. This review included verifying the RHRSW system flow calculation had included appropriate pressure drop inputs for the strainer. The strainer differential pressure alarm setpoint analysis was also reviewed to verify the operators would be alerted to high differential pressure and associated procedures directed operator actions to swap strainers prior to the strainer exceeding design differential limits. The vendor manual and vendor testing results were reviewed to identify original design specifications and strainer performance characteristics for particle removal capability. The team also interviewed system and design engineers to assess the performance of the strainers and to determine the results of periodic inspections of the strainers. Finally, the team reviewed a summary of recent maintenance activities and corrective action documents, and performed a walkdown of the strainers and associated piping and valves to assess the material condition and operating environment of the equipment.

b. Findings

Introduction. The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," for failure to identify and correct a condition adverse to quality. Specifically, Entergy did not take corrective actions to monitor and evaluate the rate of degradation of the 10S-5B1 residual heat removal service water (RHRSW) strainer. This resulted in a through wall leak in the strainer which was identified by the inspection team.

Description. During a walkdown of the "B" RHRSW strainers, the team noted water weeping from a weld on the body of the 10S-5B1 strainer. Following the identification of this condition, Entergy conducted an ultrasonic test (UT) examination to determine the size and extent of the defect. Entergy determined that the leak was a through wall pinhole leak and also identified three other localized areas below minimum wall thickness on the strainer. Entergy evaluated the degraded condition in accordance with ASME code requirements and determined that structural integrity of the strainer body was maintained. The team reviewed the UT results, engineering evaluation and operability determination, and concluded the basis for Energy's conclusion was reasonable and technically supported.

The team also reviewed previous condition reports that were written based on UT results which had identified degradation of the strainer. The team found that UTs had been conducted five times between 2004 and 2006 on the "B" RHRSW twin strainers. The results of these UTs found wall thickness degradation in various degrees. The team also noted remarks following the UT test conducted in November 2006 that stated the exterior surface of the strainer housing had continued to degrade, making it increasing difficult to accurately duplicate past UT results and concluded that the UT results could produce inaccurate wear-rates resulting in inaccurate remaining service life predictions. Entergy initiated CR-JAF-2006-05030 based on the November 2006 results. The condition report was closed to work orders that were to perform follow-up UT examination by December 2007.

The team found that the UT examination in 2007 was not performed. The UT was again scheduled to be performed in 2008, but again the team noted that the UT examination was not performed. The inspectors did not identify any documented reason why the UT examinations were postponed. Finally, the team noted Entergy had rescheduled the UT for January 2013. The team concluded that the 10S-5B strainers had not had an ultrasonic test examination performed in over 3.5 years which prevented Entergy from adequately monitoring the degrading strainer body. This resulted in the through wall leak identified by the team. In response to the leakage from the strainer body, Entergy initiated CR-JAF-2010-03442 to address the UT scheduling deficiencies and material deficiencies associated with the strainer.

Analysis. The team determined that the failure to perform adequate testing to determine the rate of degradation of the strainer was a performance deficiency that was reasonably within Entergy's ability to foresee and prevent. This finding was more than minor because it was similar to NRC IMC 0612, Appendix E, "Examples of Minor Issues," Example 2.c, in that the failure of Entergy to conduct UT examinations of the 10S-5B strainer allowed the wall thickness to degrade to the point of through wall leakage requiring repair as discussed in the ASME code. Additionally, the finding is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team performed a Phase 1 screening in accordance with IMC 0609.04, "Initial Screening and Characterization of Findings," and determined the finding was of very low safety significance (Green) because it was a design or qualification deficiency confirmed not to result in loss of operability.

This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program Component, because Entergy did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner. Specifically, the UT examination on the 10S-5B RHRSW twin strainer was deferred from December 2007 until August 2008 and then not performed until a through wall leak was discovered by the inspection team in June 2010. (IMC 0310, aspect P.1(d))

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, Entergy did not perform adequate testing from 2007 to June 2010 to monitor known wall thickness degradation on the 10S-5B RHRSW twin strainer which subsequently degraded to the point of a through wall leak. Because this violation was of very low safety significance (Green) and has been entered into Entergy's corrective action program (CR-JAF-2010-03442), this violation is being treated as a non-cited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy. **(NCV 05000333/2010006-03, Inadequate Corrective Action on RHRSW Strainer Housing Wall Degradation)**

.2.1.4 Residual Heat Removal Service Water Pump 10P-1B

a. Inspection Scope

The team inspected the 'B' RHRSW pump to verify it was capable of performing its design basis function. The team reviewed applicable portions of the UFSAR, DBD, and drawings to identify the design basis requirements for the pump. Design calculations were reviewed to assess available pump net positive suction head (NPSH) and determine required system flows. The team evaluated whether the pump capacity was sufficient to provide adequate flow to the RHR heat exchanger (HX) during design basis events and for direct use in RHR cross-tie during accident mitigation. The team also reviewed RHRSW pump in-service testing (IST) results and system flow verification tests to verify adequate system flow rate. Specifically, the team reviewed pump data trends for vibration, and pump differential pressure and flow rate test results to verify acceptance criteria were met and the acceptance limits were adequate to ensure pump degradation would not result in the system becoming inoperable.

The team evaluated completed design modification documents to determine if the changes impacted the design and licensing basis requirements. The team performed a walkdown of the pump to evaluate its material condition and assess the pump's operating environment. Additionally, the team reviewed condition reports to verify the corrective actions adequately addressed the identified deficiencies. Finally, the team evaluated the electrical design and maintenance margin of the pump motor. The pump motor specification, motor testing results, and electrical design basis calculations were reviewed to assess the adequacy of the motor to operate under worst case voltage conditions. The team reviewed the electrical distribution coordination curves, the instantaneous and time-overcurrent relay setpoints, the most recent instrument maintenance work orders for the instantaneous and time-overcurrent relay calibrations, and the most recently completed breaker and cubicle preventive maintenance work order. The documents were reviewed to verify that the pump's motor, and control and power circuits were reliably maintained.

b. Findings

No findings of significance were identified.

.2.1.5 Residual Heat Removal Heat Exchanger 10E2A

a. Inspection Scope

The team inspected the 'A' RHR HX to verify that it was capable of meeting its design basis requirements. The team reviewed applicable portions of the UFSAR, DBD, and drawings to identify the design basis requirements for the heat exchanger. The team also reviewed design calculations to verify the capability of the heat exchanger to transfer the required heat load during normal operations and postulated accident conditions. Additionally, the team reviewed the design and procedural controls for the control valves associated with the heat exchanger to verify that the required RHR flow and temperature would be present under design conditions. The team interviewed system and design engineers to determine if there were any outstanding deficiencies associated with the RHR HX. The team also reviewed corrective action documents, the results of periodic heat exchanger inspections, and the thermal performance history, and performed a walkdown of both RHR HXs to assess the material condition of the equipment.

b. Findings

No findings of significance were identified.

.2.1.6 RHR Heat Exchanger Bypass Motor Operated Valve (10MOV-66B)

a. Inspection Scope

The team inspected the RHR heat exchanger bypass MOV to verify that it was capable of performing its design function. The team reviewed the UFSAR, DBD, and procedures to identify the design basis requirements of the valve. The team also determined expected system alignments to assess whether component operation was consistent with the design and licensing basis assumptions. The team reviewed periodic verification diagnostic test results and stroke test documentation to verify acceptance criteria were met and the criteria were consistent with the design and licensing basis assumptions. The team also reviewed motor data, degraded voltage conditions, thermal overload settings, and voltage drop calculations to confirm that the MOV would have sufficient voltage and power available to perform its safety function at worst case degraded voltage conditions.

The team verified the valve safety functions, torque switch settings, performance capability, and design margins were adequately monitored and maintained in accordance with Generic Letter (GL) 89-10 guidance. Required test frequencies were reviewed to verify they were correctly determined, based on test results, as described in GL 96-05. The team also reviewed component condition reports and system health reports to verify that deficiencies were appropriately identified and resolved, and that the valve was properly maintained. In addition, the team interviewed the MOV program engineer to gain an understanding of maintenance issues and overall reliability of the valve. Finally, the team conducted a walkdown to assess the material condition of the valve, and to verify the installed valve configuration was consistent with design bases assumptions and plant drawings.

b. Findings

No findings of significance were identified.

.2.1.7 Reactor Core Isolated Cooling Pump (13 P-1)

a. Inspection Scope

The team inspected the reactor core isolated cooling (RCIC) pump to verify that it was capable of meeting its design basis requirements. The team reviewed applicable portions of the UFSAR, DBD, and drawings to identify the design basis requirements for the pump. The vendor manual and vendor testing results were reviewed to identify the original design specifications and pump performance characteristics. The team also reviewed Entergy calculations and surveillance procedures to determine whether the pump was capable of achieving design basis head/flow requirements during worst case design basis conditions and whether test acceptance criteria enveloped these requirements. The team evaluated if adequate net positive suction head was available at minimum water level during operation with either the condensate storage tank (CST) or torus as a suction source.

The team also reviewed the vendor manual to determine the recommended inspection and maintenance activities, and compared those recommendations to Entergy's preventive maintenance (PM) procedures and scheduling database. The team interviewed the system engineer and reviewed surveillance test data trending for pump flow and vibration testing to verify that pump performance was being monitored for possible degradation and that results were consistent with specified test frequency and acceptance criteria. In addition, the team reviewed work orders and condition reports (CR) to identify failures or off-nominal performance, and to determine if these deficiencies were being identified and corrected. Finally, the team performed a walkdown of the pump and associated RCIC pump area to evaluate the material condition and operating environment of the pump.

b. Findings

No findings of significance were identified.

.2.1.8 RCIC Turbine and Controls (13 TU-2)

a. Inspection Scope

The team inspected the RCIC turbine and control system to verify that it was capable of meeting its design basis functions. The team reviewed applicable portions of the UFSAR, DBD, and drawings to identify the design basis requirements for the turbine. The vendor manual was reviewed by the team to identify the original design specifications for the turbine. The team reviewed calculations, surveillance procedures, and test results to determine whether turbine power and speed, and turbine control system output were sufficient to ensure the RCIC pump could achieve its design basis head/flow conditions. Drawings and operating procedures were reviewed by the team to verify the capability and capacity of RCIC pump discharge flow through the turbine lube oil cooler during design basis events.

The team reviewed the vendor and EPRI manuals to determine the recommended inspection and maintenance activities, and compared those recommendations to Entergy's PM procedures and scheduling database. The team reviewed surveillance test results for turbine oil pressure and temperature, and safety trip testing to determine whether the results were consistent with acceptance criteria and specified test frequency. The team also interviewed the system engineer and reviewed surveillance data to verify that the turbine and control system performance were being monitored for possible degradation. Piping system drawings were reviewed to evaluate the adequacy of a vacuum breaker installation in the turbine steam exhaust piping. Additionally, the team reviewed work orders and CR history to identify failures or off-nominal performance, and to determine if deficiencies were being identified and corrected. Finally, the team performed a walkdown of the RCIC turbine to evaluate the material condition and operating environment of the equipment.

b. Findings

No findings of significance were identified.

.2.1.9 RCIC Injection Motor Operated Valve (13 MOV 21)

a. Inspection Scope

The team inspected the RCIC injection MOV to verify that it was capable of performing its design basis functions. The team reviewed applicable portions of the UFSAR, DBD, and drawings to identify the design basis requirements for the MOV. The team reviewed design standards and procedures to identify the methodology employed to size the MOV operator, and the vendor manual was reviewed to identify the qualified design conditions for the valve. The team reviewed calculations for valve stem thrust, the motor operator actuator characteristics, and the weak link analysis to determine whether the actuator and valve were capable of operation under worst-case line pressure and differential pressure conditions. The team reviewed surveillance procedures and test results to determine whether design basis stroke time requirements were enveloped by test acceptance criteria.

The team reviewed the vendor manual to determine the recommended inspection and maintenance activities, and compared those recommendations to Entergy's PM procedures and scheduling database. The team interviewed the system engineer and reviewed surveillance test data trending to verify that valve stroke performance was being monitored for possible degradation. The team also reviewed work orders and CR history to identify failures or off-nominal performance, and to determine if deficiencies were being identified and corrected. In addition, the team reviewed several documents to evaluate the electrical design and maintenance margin of the MOV. The documents included the most recently completed RCIC logic system functional and simulated automatic actuation surveillance test results, the electrical distribution coordination curve for the MOV, the most recently completed breaker preventive maintenance work order, the most recent instrument maintenance work orders for the valve circuit relays, the reduced voltage analysis, and the thermal overload setting calculation. Finally, the team performed a walkdown to evaluate the material condition and operating environment of the MOV.

b. Findings

No findings of significance were identified.

.2.1.10 Reserve Station Service Transformer (T3)

a. Inspection Scope

The team inspected the reserve station service transformer to verify that it was capable of meeting its design basis requirements. The team reviewed applicable portions of the UFSAR, DBD, and drawings to identify the design basis requirements for the transformer. The team reviewed load flow calculations to determine whether the capacity of the transformer was adequate to supply worst case accident loads. The team also reviewed the transformer protective relaying scheme drawings, calculations, and calibration records and procedures to determine whether the transformer was adequately protected and whether it was subject to spurious tripping. Additionally, the team reviewed maintenance schedules, procedures, and completed work records to determine whether the transformer was being properly maintained. The team also reviewed the corrective action history to determine whether there were any adverse operating trends, and to determine if deficiencies were being identified and corrected. Finally, the team performed a visual inspection of the transformer to assess the material condition and operating environment of the equipment.

b. Findings

No findings of significance were identified.

.2.1.11 4160Vac Circuit Breaker (10404)

a. Inspection Scope

The team inspected the 4160Vac supply circuit breaker to verify that it was capable of meeting its design basis requirements. The team reviewed applicable portions of the UFSAR, DBD, and drawings to identify the design basis requirements for the breaker. The team reviewed schematic diagrams and calculations for the circuit breaker protective relays to determine whether the circuit breaker was subject to spurious tripping. The team reviewed the undervoltage protection and bus transfer schemes for the 4160Vac breaker to determine whether it would enable continuity of offsite power to the safety buses when available, and isolate the safety bus from the non-safety 4160Vac system when required. The team reviewed maintenance schedules, procedures, and completed work records to determine whether the breaker was being properly maintained. The team also reviewed corrective action histories to determine whether there were any adverse operating trends, and to determine if deficiencies were being identified and corrected. Finally, the team performed a visual inspection of the breaker to assess the material condition and operating environment of the equipment.

b. Findings

No findings of significance were identified.

.2.1.12 4160Vac EDG Output Circuit Breaker (10602)

a. Inspection Scope

The team inspected the EDG output circuit breaker to verify that it was capable of meeting its design basis requirements. The team reviewed applicable portions of the UFSAR, DBD, and drawings to identify the design basis requirements for the circuit breaker. The team determined whether the circuit breaker would provide a reliable circuit path from EDG 'B' to 4160Vac Bus 10600. The team reviewed schematic diagrams and calculations for the circuit breaker protective relays to determine whether the circuit breaker was subject to spurious tripping. The team reviewed the undervoltage protection and diesel starting schemes to determine whether the breaker would close as required when power was available from the emergency diesel generator. The team also reviewed corrective action histories to determine whether there were any adverse operating trends, and to determine if deficiencies were being identified and corrected. Finally, the team performed a visual inspection of the breaker to assess the material condition and operating environment of the equipment.

b. Findings

No findings of significance were identified.

.2.1.13 600VAC Bus 11600 Switchgear (71L16)

a. Inspection Scope

The team inspected the bus switchgear to verify that it was capable of meeting its design basis requirements. The team reviewed applicable portions of the UFSAR, DBD, and drawings to identify the design basis requirements for the switchgear. The team reviewed bus loading calculations to determine whether the 600Vac bus and breakers were applied within their specified capacity ratings under worst case accident loading and grid voltage conditions. Short circuit calculations were also reviewed to determine whether the bus and its circuit breakers were applied within their specified ratings. Additionally, the team reviewed schematic diagrams and calculations for the 600Vac bus protective devices to ensure that equipment was adequately protected, to verify that loads were not subject to spurious tripping, and to determine whether proper coordination was maintained. The team also reviewed corrective action histories to determine whether there were any adverse operating trends, and to determine if deficiencies were being identified and corrected. Finally, the team performed a visual inspection of the bus to assess the material condition and operating environment of the equipment.

b. Findings

No findings of significance were identified.

.2.1.14 Condensate Storage Tanks 33TK-12A/B

a. Inspection Scope

The team inspected the condensate storage tanks (CST) to verify they could meet their design function. The team reviewed the condensate/feedwater, RCIC and high pressure coolant injection (HPCI) system design basis documents which described CST design requirements, to determine capacity, level setpoint and minimum/maximum temperature limits. The team also reviewed the UFSAR to determine the design function of the CST.

The team evaluated the CST ability to function as the reserve storage capacity for the RCIC and HPCI pumps. The team conducted this review to determine if the tank had sufficient capacity (at least 8 hours without makeup) for reactor decay heat removal and cool down of the unit to the hot standby condition. In addition, operator surveillance verification log records and vortex calculations were reviewed to evaluate if sufficient inventory was maintained for the design requirements.

The team inspected the capability of the tank's external enclosure to protect the tank during design basis external events such as tornados. The team also reviewed condition reports, modification work packages, internal tank inspection reports, and the condensate system health reports to verify that deficiencies were being appropriately identified and corrected. Finally, the team performed a field walkdown, and interviewed the system engineer to assess the material condition of the tank, associated piping, and level instrumentation.

b. Findings

No findings of significance were identified.

.2.1.15 Battery Room B Ventilation Return Fan (FN31B)

a. Inspection Scope

The team inspected the battery room "B" ventilation return fan to verify that it was capable of meeting its design basis requirements. The team reviewed applicable portions of the UFSAR, DBD, and drawings to identify the design basis requirements for the fan. The vendor manual and testing were reviewed to identify design conditions and test results for the fan. The team reviewed Entergy calculations, surveillances and flow balance tests to determine whether the fan was capable of achieving design basis flow requirements. The team also reviewed calculations to determine whether various mixed train ventilation lineups identified in operating procedures would maintain battery and battery charger room temperatures within design limits. Additionally, the team reviewed electrical load flow calculations to determine whether the fan motor had adequate voltage to start and run under degraded voltage conditions.

The team also reviewed the vendor manual to determine recommended inspection and maintenance activities and frequency, and compared those recommendations to Entergy's PM procedures and scheduling database. The team reviewed maintenance work orders performed on the fan to determine whether qualified replacement parts were used for safety-related and seismically qualified applications. The team interviewed the system engineer and reviewed work orders and CR history to identify failures or off-nominal performance, and to determine if deficiencies were being identified and corrected. Finally, the team performed a walkdown of the fan, and the associated battery and battery charger rooms to evaluate the material condition and operating environment of the fan.

b. Findings

No findings of significance were identified.

.2.1.16 Automatic Depressurization System/Safety Relief Valve (02RV-71E)

a. Inspection Scope

The team inspected an automatic depressurization system/safety relief valve (ADS/SRV) to verify that it was capable of meeting the design basis function. The team reviewed applicable portions of the UFSAR and drawings to identify the design basis requirements for this combination ADS/SRV pilot operated relief valve. The team reviewed the vendor manual to identify design specifications for the relief valve, associated solenoid valves, and pneumatic actuator. The team also reviewed surveillance procedures and test results to determine whether the valve relief capacity was equal to the design assumptions to depressurize the reactor vessel during design basis accident conditions, and whether test result acceptance criteria enveloped design basis limits.

The team also reviewed the vendor manual to determine the recommended inspection and maintenance activities, and compared those recommendations to Entergy's PM procedures and scheduling database. The team specifically evaluated work orders for removal of the pilot for setpoint test verification and rebuild to determine if the maintenance adequately limited setpoint drift of the relief valve, and to determine the frequency of removing and replacing pilot and main body valves, solenoid valves, and replacing critical O-rings and diaphragms in the pneumatic actuator. The system engineer was interviewed and CR history was reviewed to identify failures or off-nominal performance, and to determine if deficiencies were being identified and corrected. Specifically, the team reviewed CRs, LERs, and the current ADS performance monitoring plan to assess various corrective actions planned and implemented to permanently address the ongoing SRV pilot valve leakage and setpoint drift issue. The team reviewed the reactor vessel overpressure analyses to evaluate the impact as a result of past surveillance testing that revealed various SRVs did not lift within the required mechanical setpoint pressure range. The team also reviewed a design modification to install Stellite 21 pilot valve discs to validate compatibility of the new disc material for valve service conditions.

In addition, the team reviewed several documents to evaluate the electrical design and maintenance margin of the ADS logic and valve circuits. These included the electrical distribution coordination curves for ADS logic and valve circuits, the environmental qualification design requirements and vendor testing results for ADS solenoid valves, the most recently completed ADS logic system functional surveillance test results, and the 125Vdc battery sizing and voltage drop calculations. Finally, the team performed a visual examination of all accessible ADS control cabinets and main control room switches to assess material condition and the operating environment of the ADS control circuits.

b. Findings

No findings of significance were identified.

.2.2 Detailed Operator Action Reviews (4 samples)

The team assessed manual operator actions and selected a sample of four operator actions for detailed review based upon risk significance, time urgency, and factors affecting the likelihood of human error. The operator actions were selected from a PSA ranking of operator action importance based on RRW and RAW values. The non-PSA considerations in the selection process included the following factors:

- Margin between the time needed to complete the actions and the time available prior to adverse reactor consequences;
- Complexity of the actions;
- Reliability and/or redundancy of components associated with the actions;
- Extent-of-actions to be performed outside of the control room;
- Procedural guidance to the operators; and
- Amount of relevant operator training conducted.

.2.2.1 Align Fire Water Crosstie to Residual Heat Removal Service Water

a. Inspection Scope

The team evaluated the manual operator actions to align fire water to residual heat removal service water (RHRSW) loop A to verify the operator actions were consistent with the design and licensing bases. Specifically, the team reviewed operator critical tasks which included installing temporary hoses and aligning RHRSW to the fire water system.

The team interviewed licensed and non-licensed operators, reviewed associated operating procedures and operator training, observed an in-field operator job performance measure (JPM) to install temporary hoses and align RHRSW and fire water valves, and independently inventoried pre-staged equipment and tools, to evaluate the operators' ability to perform the required actions. In addition, the team walked down local piping and valves associated with the critical tasks to assess the likelihood of cognitive or execution errors. The team evaluated the available time margins to perform the actions to verify the reasonableness of Entergy's operating procedures and risk assumptions. The team also reviewed equipment deficiency reports, and walked down selected accessible portions of the fire water and RHRSW systems to assess Entergy's configuration control and the material condition of the systems.

b. Findings

No findings of significance were identified.

.2.2.2 Prevent Loss of the Ultimate Heat Sink due to Intake Blockage

a. Inspection Scope

The team evaluated the operator actions to recognize and mitigate a lowering intake water level condition caused by debris blockage or frazil ice. In addition, the team reviewed the manual operator actions to establish reverse intake flow, if necessary. Specifically, the team reviewed operator critical tasks to ensure the availability of the ultimate heat sink. These actions included monitoring and trending intake level, lowering reactor power, tripping circulating water pumps, scramming the reactor, securing normal service water pumps and establishing reverse intake flow as required.

The team interviewed licensed and non-licensed operators, reviewed associated operating procedures and operator training, reviewed operating logs and the corrective action program (CAP) database, and observed operator response during a simulator scenario to evaluate the operators' ability to perform the required actions. In addition, the team walked down the intake area and control room instrumentation associated with the critical tasks to assess the likelihood of cognitive or execution errors. The team evaluated the available time margins to perform the actions to verify the reasonableness of Entergy's operating procedures and risk assumptions. The team also reviewed equipment deficiency reports, and performed independent infield observations, to assess the material condition of the associated support systems. In particular, the team walked down selected accessible portions of the intake area and related risk-significant structures, systems, and components (SSCs) to independently assess Entergy's configuration control and the material condition of the SSCs.

b. Findings

No findings of significance were identified.

.2.2.3 Isolate Fire Protection Pipe Rupture

a. Inspection Scope

The team evaluated the manual operator actions to identify and isolate fire protection system pipe ruptures that presented internal flood concerns to risk significant SSCs. Specifically, the team reviewed the operator critical tasks for responding to an unexpected fire pump start, identifying fire water pipe ruptures, and isolating fire water piping at an appropriate location.

The team interviewed licensed and non-licensed operators, reviewed associated operating procedures and operator training, and observed an in-field operator JPM to respond to a simulated unexpected fire pump start to evaluate the operators' ability to perform the required actions. In addition, the team walked down fire protection piping and valves associated with the time critical tasks to assess the likelihood of cognitive or execution errors. The team evaluated the available time margins to perform the actions to verify the reasonableness of Entergy's operating procedures and risk assumptions.

The team also reviewed maintenance work orders, functional tests, plant drawings, and equipment deficiency reports to assess the material condition of the associated piping, valves, and support systems and to assess potential internal flood vulnerabilities. Finally, the team walked down selected accessible portions of the fire water piping and equipment drains to independently assess Entergy's configuration control and the material condition of the SSCs.

b. Findings

No findings of significance were identified.

.2.2.4 Local Operation of the Reactor Core Isolation Cooling System

a. Inspection Scope

The team evaluated the manual operator actions to inject into the vessel using the RCIC system which could be used during beyond design basis events. These actions included manually aligning the RCIC turbine and pump valves. In addition, the team evaluated operator actions to manually start RCIC from the control room if it failed to actuate automatically.

The team interviewed licensed operators and operator simulator instructors, reviewed associated operating procedures and operator training, and observed an in-field JPM and operator response during a simulator scenario to evaluate the operators' ability to perform the required actions. The team walked down applicable control and indicating panels in the simulator, main control room and reactor building associated with performing the manual actions to assess the likelihood of cognitive or execution errors. The team evaluated the available time margins to perform the actions to verify the reasonableness of Entergy's operating procedures and risk assumptions. The team also walked down selected in-field components and reviewed equipment deficiency reports to assess the material condition of the RCIC system.

b. Findings

No findings of significance were identified.

.2.3 Review of Industry Operating Experience and Generic Issues (4 samples)

The team reviewed selected operating experience issues for applicability at FitzPatrick. The team performed a detailed review of the operating experience issues listed below to verify that Entergy had appropriately assessed potential applicability to site equipment and initiated corrective actions when necessary.

.2.3.1 Operating Experience Smart Sample FY 2008-01 - Negative Trend and Recurring Events Involving Emergency Diesel Generators

a. Inspection Scope

NRC Operating Experience Smart Sample FY 2008-01 is directly related to NRC Information Notice (IN) 2007-27, "Recurring Events Involving Emergency Diesel Generator Operability." The team reviewed Entergy's evaluation of IN 2007-27 and their associated corrective actions. The team reviewed Entergy's EDG system health and walkdown reports, EDG CRs and work orders, leakage monitoring data, and surveillance test results to verify that Entergy appropriately dispositioned EDG concerns. Additionally, the team independently walked down the four EDGs on several occasions to inspect for indications of vibration-induced degradation on EDG piping and tubing, and for any type of leakage (air, fuel oil, lube oil, jacket water). The team also directly observed portions of the "B/D" EDG monthly surveillance run on June 7, 2010, and performed a post-run walkdown to ensure Entergy maintained appropriate configuration control and identified deficiencies.

b. Findings

No findings of significance were identified.

.2.3.2 NRC Information Notices No. 87-10 and 87-10 Supplement 1: Potential for Water Hammer During Restart of RHR Pumps

a. Inspection scope

The team reviewed drawings and other documentation to assess the applicability of the RHR water hammer issue to installed systems and equipment at FitzPatrick. The team reviewed Entergy's evaluation of the issue discussed in the NRC Information Notices and actions taken in response. The team reviewed CR summaries and interviewed system engineers to determine any identified instances of water hammer occurring during RHR pump restart. Finally, the team reviewed summaries of RHR pump run time over the past four years to determine the amount of time RHR pumps operate in the suppression cooling mode in order to verify whether RHR pump operation was within established administrative limits.

b. Findings

No findings of significance were identified.

.2.3.3 NRC Information Notice 2007-36, Emergency Diesel Generator Voltage Regulator Problems

a. Inspection Scope

The team evaluated Entergy's applicability review and disposition of NRC IN 2007-36. The IN was issued to inform licensees about operating experience regarding recent EDG voltage regulator problems. The team reviewed Entergy's evaluation of the various individual circuit component issues that affected overall EDG voltage regulator performance at several nuclear stations. Specifically, the team reviewed corrective action documents and interviewed the system engineer to validate adequate measures were in place to limit the likelihood of EDG voltage regulator problems.

b. Findings

No findings of significance were identified.

.2.3.4 NRC Information Notice 2010-03, Failures of Motor Operated Valves Due to Degraded Stem Lubricant

a. Inspection Scope

The team evaluated Entergy's applicability review and disposition of NRC IN 2010-03. The IN was issued to inform licensees of recent failures and corrective actions for motor-operated valves due to degraded lubricant on the valve stem and actuator stem nut threaded area. The team assessed Entergy's evaluation of this potential condition by reviewing specific CRs, reviewing results of MOV inspections, and conducting interviews with engineering personnel.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (IP 71152)

a. Inspection Scope

The team reviewed a sample of problems that Entergy had previously identified and entered into the corrective action program. The team reviewed these issues to verify an appropriate threshold for identifying issues and to evaluate the effectiveness of corrective actions. In addition, CRs written on issues identified during the inspection were reviewed to verify adequate problem identification and incorporation of the deficiency into the corrective action system. The specific corrective action documents that were reviewed by the team are listed in the Attachment.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

The team presented the inspection results to Mr. Peter Dietrich and other members of Entergy's staff at an exit meeting on July 1, 2010. The team reviewed proprietary information, which was returned to Entergy at the end of the inspection. The team verified that none of the information in this report is proprietary.