

# Farley 1

## 2Q/2012 Plant Inspection Findings

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### Initiating Events

**Significance:**  Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Inadvertent transfer of approximately 5000 gallons of borated water from the RWST to the RCS refueling cavity and spent fuel pool**

A self-revealing Green non-cited violation of Technical Specification 5.4.1, Procedures, was identified for the licensee's failure to adhere to the information contained within clearance 1-DT-24-E21-03211. This failure resulted in the unplanned transfer of approximately 5000 gallons of borated water from the refueling water storage tank (RWST) to the reactor coolant system (RCS) refueling cavity and spent fuel pool. In the evening hours of April 10, 2012, operations permit tagout holders allowed the manipulation of Q1E11MOV8706B and Q1E21LCV115D which created an open pathway from the RWST to the RCS refueling cavity and spent fuel pool. Q1E21LCV115D was prohibited from being open by clearance 1-DT-24-E21-03211 while Q1E11MOV8706B was open. The control room staff isolated the unintended flow path and entered the condition into their corrective action program. The licensee conducted an apparent cause determination.

The licensee failure to adhere to the information contained within clearance 1-DT-24-E21-03211 is a performance deficiency. This performance deficiency is more than minor because it is associated with the configuration control attribute of the Initiating Events cornerstone and adversely affected the objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the configuration of the residual heat removal (RHR), chemical volume and control system, and refueling water storage tank were not maintained as required and approximately 5000 gallons of borated water was transferred from the RWST to the reactor refueling cavity. The significance of this finding was screened using IMC 0609, Significance Determination Process (SDP), Phase 1 worksheets of Attachment 4. The inspectors also referenced IMC 0609, SDP worksheets of Appendix G, Shutdown Operations Significance Determination Process. The finding screened very low safety significance, Green, because it did not meet any of the loss of coolant accident, transient and external event initiators of the worksheets of Attachment 4. The inspectors reviewed this performance deficiency for cross-cutting aspects and determined the licensee failed to appropriately coordinate work activities by incorporating actions to address the impact of the work on different job activities, and the need for work groups to communicate, coordinate, and cooperate with each other during activities in which interdepartmental coordination is necessary to assure plant and human performance. The finding was assigned a cross-cutting aspect in the work control component of the human performance area H.3(b). (Section 40A2)

Inspection Report# : [2012003](#) (*pdf*)

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### Mitigating Systems

**Significance:**  Jun 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to implement design control measures to verify the adequacy of CST design**

The inspectors identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to implement design control measures to verify the adequacy of design inputs, assumptions, or limiting plant conditions which were relied upon in the design basis analyses used to demonstrate the adequacy of

condensate storage tank (CST) design. The licensee entered these issues into their corrective action program as condition reports 351170, 353599, and 355457. The licensee performed operability evaluations in support of current operability and implemented additional compensatory measures to ensure that CST level would be maintained above the condenser hotwell make-up elevation pending completion of proposed long term corrective actions. These proposed corrective actions included the more detailed design basis analysis required to support a license amendment request to increase the minimum volume of water specified by the limiting condition for operation in Technical Specification 3.7.6.

The failure to utilize conservative design inputs, assumptions, or limiting plant conditions when implementing design control measures to verify the adequacy of CST design was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the mitigating systems cornerstone attribute of design control and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with NRC inspection manual chapter 0609.04, "Initial Screening and Characterization of Findings," the inspectors used the mitigating systems column to perform a phase 1 significance determination process screening, and determined the finding to be of very low safety significance (Green). This determination was based on the fact that the performance deficiency was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a Technical Specification allowed outage time, and did not affect external event mitigation. A cross-cutting aspect was not identified because the design basis calculation associated with the performance deficiency was last approved on March 25, 1999, and therefore, did not represent current licensee performance. (Section 1R21.1)

Inspection Report# : [2012003](#) (pdf)

**G**

**Significance:** Dec 08, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Implement Design Control Measures to Verify the Adequacy of CST Design**

Green. The team identified a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, "Design Control," (with two examples) for the licensee's failure to implement design control measures to verify the adequacy of design inputs, assumptions, or limiting plant conditions which were relied upon in the design basis analyses used to demonstrate the adequacy of Condensate Storage Tank (CST) design. The licensee entered these issues into their Corrective Action Program (CAP) as Condition Reports (CRs) 355226, 355293, and 355294. The licensee performed operability evaluations in support of current operability and implemented additional compensatory measures to ensure that CST level would be maintained above the condenser hotwell make-up elevation pending completion of proposed long term corrective actions which included a license amendment request to increase the minimum volume of water specified by the limiting condition for operation in Technical Specification (TS) 3.7.6.

The failure to utilize conservative design inputs, assumptions, or limiting plant conditions when implementing design control measures to verify the adequacy of CST design was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the mitigating systems cornerstone attribute of design control and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the finding challenged the assurance that the CST contained an adequate volume of water to support its safety function to supply condensate to the Auxiliary Feedwater (AFW) system in response to design basis events. In accordance with NRC IMC 0609.04, "Initial Screening and Characterization of Findings," the team used the mitigating systems column to perform a Phase 1 Significance Determination Process (SDP) screening and determined the finding to be of very low safety significance (Green) because it was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a TS allowed outage time, and did not affect external event mitigation. This analysis was based on information contained in licensee operability determinations which demonstrated that, although the TS required minimum volume of 150,000 gallons as non-conservative, reasonable assurance existed such that the volume of CST water below the condenser hotwell make-up elevation was sufficient for the tank to perform its safety function. A cross-cutting aspect was not identified because the design basis calculation associated with the finding was approved on March 25, 1999, and did not represent current licensee performance.

Inspection Report# : [2011010](#) (pdf)

**G****Significance:** Dec 08, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Implement Design Control Measures to Verify the Adequacy of AFW Design**

Green. The team identified a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, "Design Control," for the failure to implement design control measures to verify the adequacy of design inputs, assumptions, or limiting plant conditions which were relied upon in the design basis analyses used to demonstrate the capability of the Auxiliary Feedwater (AFW) system to deliver the required flowrates to the Steam Generators (SGs). The licensee entered this issue into the Corrective Action Program (CAP) as Condition Reports (CRs) 352210, 353743, 355898, 363850, and 369676. Additionally, the licensee performed an operability determination which concluded that the AFW system remained capable of performing its safety function because actual AFW pump performance was not degraded as assumed in the accident analyses.

The failure to conservatively model AFW system friction losses when implementing design control measures to verify the capability of the AFW system to deliver the flowrates required by accident analyses was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the mitigating systems cornerstone attribute of design control and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the finding challenged the assurance that the AFW system would be capable of delivering the required flow during worst case accident conditions due to non-conservative modeling of system friction losses. In accordance with NRC IMC 0609.04, "Initial Screening and Characterization of Findings," the team used the mitigating systems column to perform a Phase 1 Significance Determination Process (SDP) screening and determined the finding to be of very low safety significance (Green) because it was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a Technical Specification (TS) allowed outage time, and did not affect external event mitigation. A cross-cutting aspect was not identified because the design basis calculation associated with the finding was approved on March 25, 1999, and did not represent current licensee performance.

Inspection Report# : [2011010](#) (*pdf*)**G****Significance:** Dec 08, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Provide Adequate Procedural Guidance for Controlling Steam Generator and Pressurizer Level During Loss of Air Events**

Green. The team identified a non-cited violation (NCV) of Technical Specification (TS) 5.4, "Procedures," for the licensee's failure to provide adequate procedural guidance for controlling steam generator (SG) and pressurizer level during loss of instrument air events and Chemical and Volume Control System (CVCS) malfunctions. Specifically, the licensee failed to evaluate the capability of motoroperated valves (MOVs) to be cycled as directed by abnormal operating procedures (AOPs). The licensee entered these issues into their Corrective Action Program (CAP) as Condition Reports (CRs) 355230, 355672 and 355695; performed DOEJ – FRSNC326893-E001, "Evaluate Cycling of Q1E21MOV8107, Q1E21MOV8107, and Q1E21MOV3764A through F"; and implemented a standing order (S-2011-12) that restricted the cycling the of the MOVs until the procedures were revised.

The failure to provide adequate procedural guidance for controlling SG and pressurizer level during loss of air events and CVCS malfunctions was a performance deficiency. The performance deficiency was more than minor because it was associated with the mitigating systems cornerstone attribute of equipment performance and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee directed the cycling of MOVs in AOPs without performing evaluations to provide assurance that the components would not fail as a result of the cycling operations and lead to a condition of inadequate SG and pressurizer level control. In accordance with NRC IMC 0609.04, "Initial Screening and Characterization of Findings," the team used the mitigating systems column to perform a Phase 1 Significance Determination Process (SDP) screening and determined the finding to be of very low safety significance (Green) because it was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a Technical Specification (TS) allowed outage time, and did not affect external event mitigation. A cross-cutting aspect was not identified because

the finding did not represent current performance.

Inspection Report# : [2011010](#) (*pdf*)

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**Significance:** Dec 08, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Correctly Translate the Design Basis into Procedures for Minimum CCW Flow to the RHR Seal Coolers and Minimum Flow Requirements for the AFW Pumps**

Green. The team identified a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, "Design Control," involving two examples. In the first example, the licensee failed to translate the minimum Component Cooling Water (CCW) flow for the Residual Heat Removal (RHR) seal coolers into Annunciator Response Procedures (ARPs). In the second example, the licensee failed to translate the Motor Driven Auxiliary Feedwater (MDAFW) and Turbine Driven Auxiliary Feedwater (TDAFW) pump minimum flow requirements into applicable ARPs. The licensee entered these issues into their Corrective Action Program (CAP) as Condition Reports (CRs) 348613 and 352485.

The failure to correctly translate the applicable design bases information for the RHR pump seal coolers and the Auxiliary Feedwater (AFW) pumps into procedures was a performance deficiency. The finding was determined to be more than minor because it was associated with the procedure quality attribute of the mitigating system 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 failure to translate the appropriate minimum flow requirements into ARPs adversely affected the quality of procedures used to respond to alarm conditions that are required by Regulatory Guide 1.33, "Quality Assurance Program Requirements." The inadequate procedures adversely affected the ability of operators to assess operability and to combat deficiencies associated with risk significant equipment. In accordance with NRC IMC 0609.04, "Initial Screening and Characterization of Findings," the team used the mitigating systems column to perform a Phase 1 Significance Determination Process (SDP) screening and determined the finding to be of very low safety significance (Green) because it was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a Technical Specification (TS) allowed outage time, and did not affect external event mitigation. A cross-cutting aspect was not identified because the finding did not represent current performance.

Inspection Report# : [2011010](#) (*pdf*)

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**Significance:** Dec 08, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Monitor or Perform Effective Preventive Maintenance on the 2C EDG Exhaust Fan Louvers**

Green. The team identified a non-cited violation (NCV) of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," for the licensee's failure to perform condition monitoring or otherwise implement an appropriate preventive maintenance program for the 2C Diesel

Generator (DG) A and B room exhaust fan louvers. The licensee entered this issue into their corrective action program (CAP) as condition reports (CRs) 351580, 349883, and 355130.

The failure to perform condition monitoring or otherwise implement an appropriate preventive maintenance program for the 2C DG A and B exhaust fan louvers was a performance deficiency. This performance deficiency was more than minor because it was associated with equipment performance attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to perform condition monitoring or otherwise implement an appropriate preventive maintenance program for the 2C DG A and B room exhaust fan louvers challenged the assurance that

these components would remain capable of performing their intended functions. In accordance with NRC IMC 0609.04, "Initial Screening and Characterization of Findings," the team used the mitigating systems column to perform a Phase 1 SDP screening and determined the finding to be of very low safety significance (Green) because it was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a TS allowed outage time, and did not affect external event mitigation. Because the licensee had initiated CRs in 2008 and 2009 for the 2C DG room exhaust louvers, and repairs were not made in a timely manner to address the issue, this finding was assigned a cross-cutting aspect in the corrective action program component of the problem identification and resolution area [P.1(d)].



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**Significance:** Dec 08, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Develop an Adequate Procedure to Test the Turbine Driven Auxiliary Feedwater Pump Discharge Check Valves**

Green. The team identified a non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to establish an adequate test procedure used to demonstrate that the Turbine Driven Auxiliary Feedwater (TDAFW) pump discharge check valves were capable of performing their design basis function. The test procedure was inadequate in providing assurance that the Auxiliary Feedwater (AFW) system was capable of providing the required design basis flow rates to the Steam Generators (SGs) with reverse flow into an idle TDAFW pump via the discharge check valves. This issue

was entered into the licensee's Corrective Action Program (CAP) as Condition Report (CR) 348795.

The failure to develop an adequate test procedure which demonstrated that TDAFW pump discharge check valves were capable of performing their design basis function was a performance deficiency. This performance deficiency was more than minor because it adversely affected the equipment performance attribute of the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the acceptance criteria used in the test procedure was non-conservative when compared to the flow rates required by the accident analyses, and the test procedure was performed at lower system pressures (which were not representative of actual design conditions). In accordance with NRC IMC 0609.04, "Initial Screening and Characterization of Findings," the team used the mitigating systems column to perform a Phase 1 Significance Determination Process (SDP) screening and determined the finding to be of very low safety significance (Green) because it was not a design issue resulting in loss of function, did not represent an actual loss

of a system safety function, did not result in exceeding a Technical Specification (TS) allowed outage time, and did not affect external event mitigation. Because the test procedure did not contain complete, accurate, and up-to-date information consistent with the system design basis safety analysis, this finding is assigned a cross-cutting aspect in the resources component of the human performance area [H.2(c)].

Inspection Report# : [2011010](#) (pdf)

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## **Barrier Integrity**

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**Significance:** Jun 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to perform ISI general visual examinations of containment moisture barrier associated with containment liner leak chase test connection threaded pipe plugs**

The inspectors identified a Green non-cited violation of 10 CFR Part 50.55a, "Codes and Standards," involving the licensee's failure to properly apply Subsection IWE of ASME Section XI for conducting general visual examinations of the metal-to-metal pipe plugs installed in the containment liner channel weld leak chase test connections that provide a moisture barrier to the containment liner seam welds. Following the inspectors' identification of this issue, the licensee conducted the visual examinations and found missing covers on two of the leak chase test connection upper cavities. Upon further inspection of both of these leak chase test connections, the licensee found blockages in the test connection piping and significant corrosion of the metal plate making up the upper cavities. The licensee found one leak chase test connection lower cavity to be full of water, which was tested and determined to be borated water. The licensee adequately evaluated the deficiencies prior to entering Mode 4 (Hot Shutdown) to ensure the integrity of containment was maintained. The licensee conducted the required in-service inspection general visual examinations of the 45 leak chase test connections and found two covers were degraded and two other covers were missing. The licensee conducted further inspections on the two connections that did not have a cover and found, and removed, blockages from both test connections and water from one test connection. The licensee further evaluated these four connections to verify that containment integrity had been maintained and would continue to be maintained

through the next operating cycle. The licensee entered this issue into their corrective action program as condition report (CR) 437663. The licensee was evaluating planned corrective actions at the conclusion of this inspection period.

The failure to conduct a general visual examination of 100 percent of the moisture barriers intended to prevent intrusion of moisture against inaccessible areas of the containment liner at metal-to-metal interfaces which are not seal welded, was a performance deficiency that was within the licensee's ability to foresee and correct. This finding was of more than minor significance because the failure to conduct required visual examinations and identify the degraded moisture barriers which allowed the intrusion of water into the liner leak chase channel, if left uncorrected, would have resulted in more significant corrosion degradation of the containment liner or associated liner welds. The finding was associated with the design control attribute of the Barrier Integrity Cornerstone and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, visual examinations of the containment metal liner provide assurance that the liner remains capable of performing its intended safety function. The inspectors used IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," and determined that the finding was of low safety significance (Green) because it did not represent an actual open pathway in the physical integrity of the reactor containment.

The inspectors identified a cross-cutting aspect in the Operating Experience component of the Corrective Action Program (CAP) cross-cutting area (P.2(b)). In their evaluation of the issue, the licensee identified relevant Operating Experience (OE) from four other plants. The inspectors concluded that the licensee did not use this information to make changes in station processes that would implement the ASME Code requirement and would have prevented the intrusion of water into inaccessible containment liner seam welds. (Section 1R08)

Inspection Report# : [2012003](#) (*pdf*)

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## Emergency Preparedness

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## Occupational Radiation Safety

**Significance:**  Jun 30, 2012

Identified By: NRC

Item Type: FIN Finding

### **Failure to monitor for auxiliary building airborne radioactivity levels as described in the FSAR**

The inspectors identified a Green finding for failure to meet the FSAR continuous online radiation monitor design bases as described in FSAR Section 12.2.4, Airborne Radioactivity Monitoring. Specifically, six of the nine continuous online radiation monitors, R-30 series, provided to monitor airborne radiation concentrations within select Unit 1 and Unit 2 Auxiliary Building locations have been out of service (OOS) for extended periods of time over the past two and half years. Further, no reviews were completed to evaluate the significance of the OOS monitors nor were compensatory sampling activities performed during the extended OOS periods. The licensee entered this issue into their corrective action program as Condition Report (CR) 44407, and CR 463051, and implemented compensatory activities.

The inspectors determined that the failure to monitor airborne radioactivity levels as described in FSAR Section 12.2.4 was a performance deficiency. The finding is greater than minor because it is associated with the Occupational Radiation Safety Cornerstone attribute of Plant Facilities/Equipment and Instrumentation and adversely affects the cornerstone objective of ensuring the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Inadequate monitoring of areas with the potential for airborne radioactivity could lead to worker contamination and increased exposure. The finding was assessed using the Occupational Radiation Safety Significance Determination Process (SDP). Based on the facts that this was not an ALARA planning issue, there were no overexposures nor substantial potential for overexposures, and

the licensee's ability to assess worker dose was not compromised, the finding was determined to be of very low safety significance (Green). This finding has a cross-cutting aspect in the area of Human Performance [H.2(d)] because the licensee did not ensure that equipment was adequate and available to assure nuclear safety. (Section 2RS5)

Inspection Report# : [2012003](#) (*pdf*)

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## Public Radiation Safety

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## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## Miscellaneous

**Significance:** N/A Aug 24, 2007

Identified By: NRC

Item Type: FIN Finding

### **Biennial Identification and Resolution of Problems Inspection Results**

One finding of very low safety significance (Green) was identified. The licensee was generally effective in identifying problems at a low threshold and entering them into the corrective action program. The licensee properly prioritized issues entered into the corrective action program (CAP) and routinely performed evaluations that were technically accurate and of sufficient depth to address the issue documented in the condition reports (CRs). Overall, corrective actions were effective; however, minor examples of inadequate condition report broadness reviews and documentation issues related to the closure of action items were identified. In general, operating experience was found to be used both proactively and reactively by personnel involved in the corrective action program; however, an example of industry operating experience was identified in which the licensee did not completely develop interim compensatory measures for a condition to which Farley was vulnerable. The licensee's programmatic self-assessments and audits were generally effective in identifying weaknesses in the corrective action program; however, a missed opportunity in the trending of issues which could result in adverse effects on safety-related plant components was identified. The inspectors also concluded that the workers at Farley felt free to report safety concerns.

Inspection Report# : [2007006](#) (*pdf*)

Last modified : September 12, 2012