

# Farley 1

## 4Q/2011 Plant Inspection Findings

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### Initiating Events

**Significance:**  May 24, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Flame Detected on the 1A RCP Handswitch**

TBD. A self-revealing finding and apparent violation of Technical Specification 5.4, Procedures, was identified for failing to maintain the configuration of the 1A RCP oil lift pump system in accordance with plant design and drawings. The licensee incorrectly re-landed electrical wiring following maintenance to the 1A RCP oil lift pump pressure switch. This issue revealed itself upon the discovery of a flame on the 1A RCP handswitch in the Unit 1 main control room (MCR).

The licensee's failure to maintain the configuration of the 1A RCP oil lift pump system in accordance with plant design and drawings is a performance deficiency. Work was completed, by skill of the craft, without inclusion into an amendment to the existing calibration work order, and resulted in the incoming electrical feeds for the 125 vDC and 130 vAC circuits being cross-connected and causing a fire on the MCR board when the 1A RCP handswitch was taken to start. The finding is more than minor because it was associated with the Protection Against External Factors attribute of the Initiating Events cornerstone to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, a fire occurred in the MCR for Units 1 and 2 as a result of the mis-wiring causing an electrical short in the 1A RCP handswitch. This finding was assessed using the Phase 1 screening worksheets of Appendix 4 and Appendix F of MC 0609, and warranted a review by a regional Senior Risk Analyst because a fire in the MCR had actually occurred. The regional Senior Risk Analysts determined the significance of this finding is preliminarily White. The finding does not represent an immediate safety concern because the wiring has been returned to the original plant design. The finding was assigned a cross-cutting aspect in the Work Practices component of the Human Performance area in that personnel did proceed in the face of uncertainty or unexpected circumstances. [H.4(a)]

After considering the information you provided at the regulatory conference, the NRC has concluded that the finding is appropriately characterized as Green, a finding of very low safety significance. The NRC also has determined that the finding is a violation of Technical Specification 5.4.1 as discussed in inspection report 05000348/2011-012 and 05000364/2011-012. The circumstances surrounding the violation was described in detail that inspection report. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program as CR 2010116613, this violation is being treated as an NCV, consistent with the Enforcement Policy. NCV 05000348,364/2011012-01, Flame Detected on the 1A RCP Handswitch.

Inspection Report# : [2011012](#) (*pdf*)

Inspection Report# : [2011013](#) (*pdf*)

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### Mitigating Systems

**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)

**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)

**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)

**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)

**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)].

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

**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)

**Significance:**  Mar 31, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to maintain safety-related cables in a non-submerged environment**

A self-revealing Green NCV of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified for the licensee's failure to implement measures to assure safety-related cables remained in an environment for which they were certified. Safety-related cables purchased and installed in underground electrical pull boxes at Farley Nuclear Plant (FNP) have been subjected to submergence, a condition for which they are not designed. The licensee entered this issue into its CAP as CR 2010100512, which included the action to increase the frequency of measuring water level in pull boxes and removing excess water to ensure cables are not submerged. Despite the increased frequency of the preventative maintenance, electrical pull box B1M53 was observed by NRC inspectors to contain safety-related cables completely submerged in water on four separate occasions in the first quarter of 2011. Upon discovery of this condition, the licensee wrote CR 2011103553.

Failure to maintain safety-related electrical cables in a physical environment for which the cables are designed to operate, is a performance deficiency. This performance deficiency is more than minor because it is associated with the design control attribute of the Mitigating Systems (MS) cornerstone, and adversely affected the cornerstone objective to ensure the reliability of systems responding to initiating events to prevent undesirable consequences. The design control attribute of the MS cornerstone was determined to be adversely affected; because 1) testing of these cables has not been performed, 2) the cables have not been maintained within the parameters for which they are designed, 3) the corrective action to increase frequency of preventative maintenance was ineffective in preventing submergence of safety-related cables, and 4) there have been documented failures of cables throughout the nuclear industry due to degradation caused by submergence in water. The significance of this finding was screened using the Phase 1 of the SDP in accordance with NRC Inspection Manual Chapter 0609 Attachment 4. The finding screened as Green, because the finding is a design or qualification deficiency confirmed not to result in loss of operability or functionality. The finding was assigned a cross-cutting aspect in the corrective action

program component of the Problem Identification and Resolution area because of the licensee's evaluation of the problem failed to identify a resolution that addressed the cause and extent of conditions (P.1(c)). Specifically, the inspectors determined the increased pull box preventative maintenance was ineffective in preventing safety-related cable exposure to unqualified conditions, and the corrective actions were inadequate in ensuring the problem was resolved. (Section 1R06)

Inspection Report# : [2011002](#) (pdf)

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## **Barrier Integrity**

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## **Emergency Preparedness**

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## **Occupational Radiation Safety**

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## **Public Radiation Safety**

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## **Physical Protection**

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not

provided to a possible adversary. 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 : March 02, 2012