

Farley 2

2Q/2012 Plant Inspection Findings

Initiating Events

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*)

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*)

G

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*)

G

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:  Nov 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

TDAFW Pump Inoperable due to Improper Control of Station Drawings

Green: A self-revealing non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, Design Control was identified for the licensee's failure to correctly update their design drawing for the Unit 2 Turbine Driven Auxiliary Feedwater (TDAFW) pump electrical controls. This drawing was later used to correct existing discrepancies (a condition adverse to quality) with the TDAFW pump electrical controls which resulted in the Unit 2 TDAFW pump being inoperable. This condition revealed itself 24 days later when the licensee performed a surveillance test to confirm operability of the TDAFW pump from the Hot Shutdown Panel and the pump tripped on an overspeed condition. The licensee restored operability of the TDAFW pump on July 31, 2011, by re-landing the lifted electrical leads.

Failure to maintain the accuracy of station controlled design drawings is a performance deficiency. This performance deficiency is more than minor because it is associated with the Design Control attribute of the Mitigating Systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the

licensee did not maintain adequate design control of the TDAFW pump electrical control drawings which were relied upon to maintain proper configuration of the plant. The inaccurate drawings resulted in the Unit 2 TDAFW pump being inoperable for approximately 24 days. The finding was evaluated using the work sheets of MC 0609, "Significance Determination Process," Attachment 4, and Appendix A. The inspectors determined further review was required by the regional senior risk analyst (SRA) to determine significance. The regional SRAs used the latest NRC Farley Standardized Plant Analysis Risk (SPAR) model and the licensee's full scope Farley Probabilistic Risk Assessment (PRA) model. The licensee's Farley Fire PRA model was used to estimate

the external event fire risk. Recovery human error probabilities were developed using the NRC SPAR-H methodology for diagnostic and action portions of the recovery. The major assumptions of the analysis included: (1) The TDAFW pump would start and trip on overspeed for all automatic and remote manual start attempts, (2) An exposure period of 593 hours, and (3) TDAFW pump recovery via local manual trip and throttle valve control for all scenarios except Anticipated Transient Without Scram and Loss of Seal Cooling scenarios due to time constraints. The dominant sequences were (1) a Loss of Service Water initiator due to pipe rupture leading to a loss of Component Cooling Water and the motor driven AFW pumps, loss of the TDAFW due to the PD, and failure to recover the TDAFW pump via local manual control leading to RCP seal LOCA and core damage, and (2) a Reactor Trip initiator

with a common cause failure of the motor driven AFW pumps, loss of the TDAFW pump due to the PD, failure to recover the TDAFW pump via local manual control and failure to implement feed and bleed leading to core damage. The risk was mitigated by the remaining AFW capability, the fact that the PD only affected the TDAFW pump and did not prevent recovery via local manual control, and the relatively short exposure period. The core damage frequency increase was less than 1×10^{-6} per year; therefore the finding was of very low risk significance (GREEN).

The inspectors identified a cross-cutting aspect in the Work Control component of the Human Performance cross-cutting area (H.3(b)). Specifically, the licensee failed to coordinate between departments during planning activities in which interdepartmental coordination was necessary to assure plant performance. (Section 40A2) NCV 05000364/20110014-01.

Inspection Report# : [2011014](#) (pdf)

Significance: G Sep 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to properly pre-plan maintenance activities while conducting tagout operations on the 2C charging pump

A self-revealing NCV of Technical Specification (TS) 5.4.1a was identified for the licensee's failure to implement procedures recommended in Regulatory Guide (RG) 1.33. Specifically, the licensee did not properly pre-plan maintenance tagout activities on the unit 2 charging system. As a result, the licensee inadvertently overpressurized the 2C high head safety injection (HHSI) pump suction piping, adversely affecting the availability of the safety-related pump. Upon discovery of this condition, the licensee immediately depressurized the pump suction piping and initiated condition report (CR) 343336.

Failure to properly pre-plan maintenance activities is a performance deficiency. This performance deficiency is more than minor because it is associated with the human performance attribute of the mitigating systems (MS) cornerstone, and adversely affected the cornerstone objective to ensure system availability of components responding to initiating events preventing undesirable consequences. The human performance attribute of the MS cornerstone was determined to be adversely affected because: 1) the licensee's tagout procedure relied on a check valve as part of the maintenance boundary; 2) the licensee's tagout sequence isolated the pump suction valve prior to isolating the pump discharge valve; resulting in overpressurization of the 2C charging pump suction piping, which rendered the 2C charging pump inoperable from August 11, 2011, to September 9, 2011. The significance of this finding was screened using IMC 0609, Significance Determination Process (SDP), Phase 1 worksheets of Attachment 4. The finding screened as Green, because it did not represent an actual loss of safety function of a single train of emergency core cooling system (ECCS) for greater than its TS allowable outage time. The finding was assigned a cross cutting aspect in the resources component of the human performance area (H.2(c)). Specifically, complete, accurate and up-to-date work packages could have prevented overpressurization of the pump. (Section 1R12)

Inspection Report# : [2011004](#) (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance: G 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*)

Public Radiation Safety

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.

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