

Farley 2

1Q/2015 Plant Inspection Findings

Initiating Events

Significance: G Dec 31, 2014

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to perform an adequate risk assessment led to a manual reactor trip of Unit 2

A self-revealing non-cited violation (NCV) of 10 CFR 50.65, “Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, was identified for the licensee’s failure to properly assess and manage the increase in risk that resulted from maintenance activities while the 2B diesel generator (DG) was out of service for a planned maintenance outage the week of October 13, 2014. As a result, a Unit 2 manual reactor trip was required when cooling was lost to each reactor coolant pump (RCP) oil cooler and thermal barrier heat exchanger when the 2B startup auxiliary transformer (SAT) deenergized unexpectedly while the 2B DG was tagged out for maintenance. Corrective actions are planned that will prevent a planned diesel generator outage in the same train as the component cooling water “on-service” train. Condition reports CR 880201 and 880329 were entered into the licensee’s corrective action program.

The failure to perform an adequate qualitative risk assessment was a performance deficiency. The performance deficiency was more than minor because it adversely affected the configuration control attribute of the initiating events cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. Specifically, the risk associated with the CCW configuration in tandem with the 2B DG outage was not considered. This contributed to a manual reactor trip caused by the loss of the 2B SAT because this operating equipment line up caused the operators to trip the Unit 2 reactor. The inspectors determined the finding had a cross-cutting aspect of “work management” in the human performance area, because the risk associated with operating the “B” train of CCW as the “on service” train while the 2B was out of service for planned maintenance was not considered. [H.5]

Inspection Report# : [2014005](#) (*pdf*)

Mitigating Systems

Significance: G Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Ensure Rolling Fire Doors on Units 1 and 2 Complied with Fire Code

An NRC identified non-cited violation (NCV) of Farley Nuclear Plant, Unit 1, Operating License Condition 2.C.(4), and Unit 2, Operating License Condition 2.C.(6), “Fire Protection” was identified for the licensee’s failure to install rolling steel fire doors in the Appendix R 3-hour common fire barrier for all five diesel generators in accordance with the Updated Final Safety Analysis Report (UFSAR). Specifically, the installed rolling steel fire doors (D-702, D-705, D708, D-711, and D-714) design did not include fire detectors (fusible links or other type of labeled fire detection devices) to automatically close the doors under fire conditions, in the event of a fire in Fire Area 71 (South Hallway),

as stated in the Farley Nuclear Plant UFSAR. The licensee included this deficiency in their corrective action program as CR867970 and implemented an hourly fire watch in the affected Fire Areas.

The licensee's failure to ensure that rolling steel fire doors included fire detectors to automatically close the doors under fire conditions, in the event of a fire in Fire Area 71 (South Hallway), was determined to be a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events (fire) attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated this finding using the NRC's significance determination process (SDP) and the finding was of very low safety significance. There is no cross cutting aspect for this deficiency because the problem was not indicative of current licensee performance.

Inspection Report# : [2014005](#) (*pdf*)

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Acceptance Criteria for Steam Generator Steam Flow Channel Checks

Green. A NRC-identified non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was identified for the licensee's failure to include appropriate quantitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Specifically, licensee procedures FNP-1-STP-1.0 and FNP-2-STP-1.0, "Operations Daily and Shift Surveillance Requirements," did not contain adequate acceptance criteria for steam generator (SG) steam flow channel checks. As a corrective action the licensee removed the inadequate quantitative acceptance criteria from both procedures FNP-1-STP-1.0 and FNP-2-STP-1.0. The licensee entered this issue in their corrective action program as condition reports (CRs) 814962, 838289 and 840501.

The failure to provide adequate acceptance criteria for the steam flow instruments channel check surveillance was a performance deficiency. The performance deficiency was more than minor because it was associated with the procedure quality 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 acceptance criteria allowed by Figure 1 of licensee procedure FNP-1-STP-1.0 and FNP-2-STP-1.0 for the SG steam flow channel check impacted the licensee's determination of operability of the Unit 2 "B" SG steam flow instrument channels during low power operations in Mode 1 between May 17 and 18. This finding was evaluated using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," issued June 19, 2012. This finding screened to Green using Exhibit 2 – "Mitigating Systems Screening Questions," because it did not represent an actual loss of function of a single train for greater than its TS allowed outage time. Redundant instruments were available to actuate the main steam isolation function at the required setpoint. The inspectors determined the finding had a cross-cutting aspect of "conservative bias" in the human performance area, because the procedures that allowed the larger tolerance associated with the steam flow channel checks at low power levels were not questioned, but used by the operators to rationalize a satisfactory channel check. [H.14]

Inspection Report# : [2014004](#) (*pdf*)

Significance:  Jun 06, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Operability Evaluation of the CCW Miscellaneous User Isolation Valves

Green. The team identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the licensee’s failure to perform an adequate operability evaluation following the discovery that the component cooling water miscellaneous user isolation valves would not isolate the safety-related piping from the non-safety related portion. The licensee entered the issue into their corrective action program as condition report 823056. In 2013, the valve actuators were modified from air to open and close, to a spring to close design so this is not a current operability issue.

The team determined that the failure to perform an adequate operability evaluation as required by NMP-AD-012, “Operability Determinations and Functionality Assessments,” 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 Equipment Performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the inspectors had reasonable doubt on the past operability of component cooling water because the operability evaluation relied on assumptions that were not correct, regarding the ability to establish make-up water to the on-service component cooling water train. The team performed a significance screening of this finding using the guidance provided in IMC 0609, “Significance Determination Process,” attachment 0609.04, “Initial Characterization of Findings.” The team determined the finding required a detailed risk evaluation in accordance with Exhibit 2, “Mitigating Systems Screening Questions,” and Exhibit 4, “External Event Screening Questions.” A risk analysis was completed by a regional senior reactor analyst in accordance with the guidance of NRC IMC 0609 Appendix A. A bounding analysis was performed using Farley site specific seismic data and a conditional core damage probability determined using the NRC Farley SPAR PRA model. In addition, NUREG/CR6544 and NUREG/CR4550 show SSC fragility data for generic component types. From Table 1 Generic Seismic Fragilities the data shows that offsite power would be affected at 0.3G, electrical equipment and large flat bottomed storage tanks at approx. 1G, heat exchangers at 1.9 G with motor driven pumps at 2.0 G and piping at 3.8G. The major analysis assumptions included: a one year exposure period, no credit for the reactor coolant pump (RCP) shutdown seals, the performance deficiency was assumed to result in lowering surge tank level and subsequent common cause failure of all three CCW pumps with no recovery, and the miscellaneous headerpiping and components were assumed to fail from a seismic event of magnitude 0.3 – 0.5 G. The dominant sequence was a loss of RCP seal cooling resulting in an RCP seal LOCA caused by loss of CCW. The risk was mitigated by the low frequency of the seismic initiating event. The analysis determined that the risk increase due to the performance deficiency was an increase in core damage frequency of $< 1E-6$ /year, a GREEN finding of very low safety significance. The team did not identify a cross-cutting aspect associated with this finding because this performance deficiency was not indicative of present licensee performance. (Section 1R21.2b.1) Inspection Report# : [2014007](#) (pdf)

Significance:  Jun 06, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Comply with IEEE 308-1971 for the Required Independence of 120 Volt Vital AC Distribution System Channels

Green. The team identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to demonstrate compliance with IEEE 308-1971 for the required independence of 120V vital AC distribution system channels. The licensee entered the issue into their corrective action program as condition report 820528 and performed an immediate determination of operability and determined that the inverters were operable but non-conforming.

The team determined that the failure to conform to the independence requirements of IEEE 308-1971, to which the licensee was committed, 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 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 finding resulted in a condition where there was a reasonable doubt of the operability of the 120V vital AC distribution system channels. In addition, the performance deficiency is similar to example 3j of IMC 0612, Appendix E, “Examples of Minor Issues.” The team determined that the finding was of very low safety significance (Green) because it was not a design deficiency resulting in the loss of functionality or operability. The team did not identify a cross-cutting aspect associated with this finding because this performance deficiency is not indicative of present licensee performance.

Inspection Report# : [2014007](#) (*pdf*)

Significance:  Jun 06, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Correct Lack of Validated Time Critical Operator Actions Analyses

Green. The team identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action,” for the licensee’s failure to promptly correct a lack of documented verification and validation for time critical operator actions which are inputs into design basis plant safety analyses. The licensee entered the issue into their corrective action program as condition report 823401. Initial time validations of the more limiting time critical operator actions have been completed and the remaining Updated Final Safety Analysis Report (UFSAR) described time critical operator actions have been identified and scheduled for validation.

The team determined the licensee’s failure to promptly correct a lack of documented verification and validation for time critical operator actions, which are inputs into design basis plant safety analysis 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 programmatic failure to ensure design basis operator actions could be accomplished within required time limits could impact the availability and capability of systems that respond to initiating events and result in unanalyzed plant conditions. The team determined that the finding was of very low safety significance (Green) because it was not a design deficiency resulting in the loss of functionality or operability. The team determined this finding was associated with the cross-cutting aspect of Evaluation in the area of Problem Identification and Resolution because following the identification of this deficiency in 2012, the licensee did not adequately evaluate the current operability for mitigating SSCs reliant upon these time critical operator actions described in the UFSAR. [P.2]

Inspection Report# : [2014007](#) (*pdf*)

Significance:  Jun 06, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Acceptance Criterion for UHS Temperature Did Not Consider Instrument Uncertainty

Green. The team identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the licensee’s failure to include

an appropriate acceptance criterion for ultimate heat sink (UHS) temperature in surveillance procedures. Specifically, the acceptance criterion did not account for instrument uncertainty. The licensee entered the issue into their corrective action program as condition report 810638. As an immediate corrective action, the licensee established an action tracking item for control room operators to declare UHS inoperable if indicated temperature exceeded 90 degrees Fahrenheit. In addition, the licensee performed a historic review and did not find an example where the technical specifications (TS) temperature limit of 95 degrees Fahrenheit was exceeded.

The team determined the failure to include appropriate acceptance criterion for UHS temperature in surveillance procedures 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 Equipment Performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of the UHS system to respond to initiating events to prevent undesirable consequences. Specifically, the failure to account for UHS temperature instrument uncertainty was significant enough to require revision of the associated surveillance procedures to ensure the validity of heat exchanger performance calculations and compliance with TS limits. The team determined the finding was of very low safety significance (Green) because it was not a design deficiency resulting in the loss of functionality or operability. The team did not identify a cross-cutting aspect associated with this finding because it is not indicative of present licensee performance.

Inspection Report# : [2014007](#) (*pdf*)

Significance:  Jun 06, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Acceptance Criterion for Testing of Check Valves

Green. The team identified a Green non-cited violation of 10 CFR 50.55a(f), "Inservice testing requirements," subsection (4), American Society of Mechanical Engineers Operation and Maintenance of Nuclear Power Plants code, Subsection ISTC-5221, "Check Valves," with two examples for the licensee's failure to incorporate adequate acceptance criteria for testing safety-related check valves into the procedures. The licensee entered both examples into their corrective action program as condition reports 816150 and 816303. A review of past pump data and testing indicated the check valves caused no degradation to the high-head safety injection system.

The team determined the failure to establish acceptance criteria that demonstrates closure of safety-related check valves 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 of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, testing Unit 1 & 2 refueling water storage tank (RWST) supply to charging header check valves (Q1/2E21V026) using an acceptance criterion of boric acid tank pump discharge pressure greater than 80 psig (normally 115+ psig) with no change in boric acid tank level, may have resulted in the check valves not seating and allowed reverse flow to the RWST. In addition, using an acceptance criterion of no reverse rotation of the charging pump impeller when testing the Unit 1 & 2 charging pump mini-flow check valves (Q1/2E21V0121) and Unit 1 & 2 charging pump discharge check valves

(Q1/2E21V0122) may result in the check valves not seating and challenge high head safety injection flow. The team determined that the finding was of very low safety significance (Green) because it was not a design deficiency resulting in the loss of functionality or operability. The team did not identify a cross-cutting aspect associated with this finding because it is not indicative of present licensee performance.

Inspection Report# : [2014007](#) (*pdf*)

Significance:  Jun 06, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Characterization of IST Program Valves

Green. The team identified a Green non-cited violation of 10 CFR 50.55a(f), “Inservice testing requirements,” subsection (4), American Society of Mechanical Engineers Operation and Maintenance of Nuclear Power Plants code, Subsection ISTC-1300, “Valve Categories,” for the licensee’s failure to categorize Unit 1 & 2 charging pump suction isolation valves (LCV115 B & D), and Unit 1 & 2 refueling water storage tank (RWST) supply to charging header check valves (Q1/2E21V026) as Class “A” for which seat leakage is limited to a specific maximum amount in the closed position. Specifically, the licensee’s inservice testing program did not test safety-related valves to ensure they could perform their safety function in the closed direction and meet seat leakage requirements. The licensee entered the issue into their corrective action program as condition reports 823022 and 815699. A review of past pump data indicated the valve held against system pressure and would not allow a significant reverse flow.

The team determined that failure of the licensee to properly categorize LCV115 B & D and QV026 in their inservice testing program to ensure they could perform their safety function 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 of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to properly categorize valves as Category “A” resulting in failure to leak test the valves to ensure reverse flow of containment sump water to the RWST did not result in exceeding the plant’s post accident dose rate limits. The team determined the finding was of very low safety significance (Green) because it was not a design deficiency resulting in the loss of functionality or operability. The team did not identify a cross-cutting aspect associated with this finding because it is not indicative of present licensee performance.

Inspection Report# : [2014007](#) (*pdf*)

Significance:  Jun 06, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Ensure that the RHR System Would Be Capable to Mitigate a MODE 4 LOCA

Green. The team identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to ensure the residual heat removal (RHR) system would be capable to respond to a MODE 4 loss of coolant accident (LOCA). Specifically, low pressure coolant injection may not be available during MODE 4, which is required for a large break LOCA. The licensee entered the issue into their corrective action program as condition report 826059. As an immediate

corrective action, the licensee performed an extent of condition to identify other deficient procedures. In addition, the licensee implemented action tracking items in the control room to limit one train of decay heat removal operation while above 212 degrees Fahrenheit.

The team determined that the failure to ensure that RHR would be capable to respond to a LOCA that initiates in MODE 4 as required by TS 3.5.3., "ECCS - Shutdown," was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the Mitigating System cornerstone attribute of Equipment Performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, procedures and design for the RHR system did not ensure the capability to perform its emergency core cooling system mitigating function of low pressure injection while in MODE 4 because steam void formation could occur and was not evaluated. The finding was screened in accordance with NRC Inspection Manual Chapter (IMC) 0609 Attachment 4 and was transitioned to IMC 0609 Appendix G as the finding represented a degraded condition, which could occur only during shutdown conditions. NRC IMC 0609 Appendix G Attachment 1 screening determined that the finding represented a potential loss of system safety function and required a phase 2 shutdown risk assessment. A bounding phase 2 shutdown risk assessment was performed by a regional senior reactor analyst in accordance with NRC IMC 0609 Attachment 2. The major assumptions in the analysis included an exposure interval of 5 minutes for Unit 1 only and a bounding conditional core damage probability of 1.0 given a LOCA. The risk was mitigated by the short exposure period and the low probability of a LOCA during shutdown conditions. The result of the analysis was an increase in core damage frequency of $< 1E-6$ /year a GREEN finding of very low safety significance. The team did not identify a cross-cutting aspect associated with this finding because it is not indicative of present licensee performance.

Inspection Report# : [2014007](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

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 Jun 06, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Update the UFSAR with the Safety Analysis Performed in Response to GL 2008-01

Severity Level IV. The team identified a Severity Level (SL) IV non-cited violation of 10 CFR 50.71, "Maintenance of Records, Making of Reports," for the licensee's failure to update the Updated Final Safety Analysis Report (UFSAR). Specifically, the UFSAR was not updated to reflect the analysis requested by the NRC in GL 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems." The licensee entered the issue into the corrective action program as condition report 823270.

The team determined the failure to update the UFSAR with the analyses performed for GL 2008-01 was a performance deficiency. Failures to update the UFSAR are dispositioned using the traditional enforcement process instead of the SDP in accordance with IMC 0612, Appendix B, Block TE2, because they potentially impede or impact the regulatory process. Specifically, failures to update the UFSAR challenges the regulatory process because it serves as a reference document used, in part, for recurring safety analyses, evaluating license amendment requests, and in preparation for and conduct of inspection activities. As a result, the team compared the performance deficiency against the examples in Section 6.1 of the NRC Enforcement Policy and determined it constituted a more than minor traditional enforcement violation because it rose to a SL-IV violation. Specifically, SL-IV violation example d.3 stated "A licensee fails to update the UFSAR as required by 10 CFR 50.71(e) but the lack of up-to-date information has not resulted in any unacceptable change to the facility or procedures." The team determined an evaluation for cross-cutting aspect was not applicable because this was a traditional enforcement violation.

Inspection Report# : [2014007](#) (*pdf*)

Last modified : June 16, 2015