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Robinson 2 – Quarterly Plant Inspection Findings

2Q/2017 – Plant Inspection Findings

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Initiating Events

Significance: G Sep 30, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Assess and Manage Risk for Main Turbine Trip Maintenance Resulting in Turbine/Reactor Trip

A self-revealing Green non-cited violation (NCV) of 10 CFR 50.65(a)(4) was identified for the failure to adequately assess and manage the increase in risk associated with online maintenance activities involving the removal of the cover to the main turbine trip mechanism in order to perform visual inspections. During removal of the cover, the turbine trip mechanism lever was contacted causing an automatic turbine/reactor trip. The licensee took immediate corrective actions to reemphasize the need to enter all applicable types of work activities into the work management process and to conduct formal risk assessments in accordance with the risk management program. The licensee entered this issue into the corrective action program (CAP) as condition report (CR) 2056554.

The licensee's failure to adequately assess and manage the risk of maintenance associated with visual inspection of the turbine trip mechanism was a performance deficiency (PD). The inspectors evaluated the PD in accordance with IMC 0612, Appendix B, "Issue Screening," and determined it to be more than minor because it impacted the human performance attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically, the failure to assess and manage the risk associated with removing the turbine trip mechanism cover to conduct visual inspections resulted in a turbine/reactor trip. The inspectors evaluated the finding in accordance with IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." In accordance with Appendix K, the inspectors requested that a regional Senior Reactor Analyst (SRA) independently evaluate the risk. A Region II SRA performed an analysis of the risk deficit for the unevaluated condition associated with the work activity on the turbine trip mechanism. The latest Robinson Standardized Plant Analysis Risk (SPAR) model was used to calculate an incremental core damage probability deficit (ICDPD). The result was an ICDPD of $3.74E-7$ and represented the increase in core damage probability associated with a turbine/reactor trip coincident with

the dedicated shutdown diesel generator being out of service at the time of the event. In accordance with IMC 0609, Appendix K, because the calculated ICDPD was not greater than 1E-6, the finding was screened as having very low safety significance (Green). The cause of the PD was directly related to the cross-cutting aspect of work management in the cross-cutting area of human performance because the licensee failed to adequately implement a process of planning, controlling, and executing work activities such that nuclear safety was the overriding priority. Specifically, the licensee failed to adequately assess, manage, and implement risk management actions for activities associated with trip sensitive equipment. [H.5

Inspection Report# : 2016003 (*pdf*)

Mitigating Systems

Significance: G Sep 30, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Scope Tainter Gate Flood Protection Features in Maintenance Rule Resulting in Degraded Performance

A self-revealing Green NCV of 10 CFR 50.65(b)(2)(ii) was identified for the failure to scope the external flood protection function of the Robinson Lake Dam spillway (Tainter) gates in the maintenance rule (MR) monitoring program. The failure to include the Tainter gates in the MR program resulted in ineffective maintenance being performed and subsequent degraded opening capability which challenged the availability of safety-related equipment during design basis rainfall events due to site flooding. The licensee took immediate corrective actions to replace/refurbish the chains to both gates and completed full open testing to restore their functionality. In addition, the licensee has developed and initiated implementation of an action plan to improve and ensure reliability of the gates, and initiated actions to revise the MR scoping program to include the Tainter gates. The issue was entered into the licensee's CAP as CR 2035500.

The failure to scope the flood protection function of the Lake Robinson Dam Tainter gates in the maintenance rule monitoring program was a PD. The finding is more than minor because it is associated with the protection against external factors (i.e., flood hazard) attribute of the Mitigating Systems Cornerstone 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, failure to monitor flood protection features associated with the Tainter gates resulted in degraded gate opening performance that could have resulted in site flooding during design basis rainfall events and adversely impact multiple trains of safety-related equipment due to water intrusion. Using IMC 0609, Appendix A, "The SDP for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined the finding involved the degradation of equipment specifically designed to mitigate flooding events. In accordance with Exhibit 4, "External Events Screening Questions," the inspectors determined that the finding represented a degradation of two or more trains of a multi-train system or function during an external flooding event, therefore it required a detailed risk evaluation. A regional senior reactor analyst completed a detailed risk evaluation in accordance with NRC IMC 0609 Appendix A, and Appendix M, Significance Determination Process Using Qualitative Criteria, using the latest NRC Robinson Standardized Plant Analysis Risk model. The high uncertainty associated with estimating flood frequencies was the reason for using the NRC IMC Appendix M approach. The major analysis assumptions included a one-year exposure interval, recovery credit for opening the Tainter gates subsequent to binding of the chain, and limited credit for FLEX flooding mitigation strategies. If the rainfall produced a water surface elevation which would overtop the dam, the dam was considered failed and the ultimate heat sink lost. The rainfall frequencies requiring gate operation were estimated using a combination of National Oceanographic and Atmospheric Administration rainfall data and a probabilistic technique to establish precipitation frequency estimates performed by the licensee. The dominant sequence was a flood event inducing a non recoverable loss of offsite power and loss of the emergency buses with a failure of the operators to manually recover the Tainter gates and failure of the operators to depressurize the steam generators to facilitate FLEX injection leading to a loss of core heat removal and core damage.

The risk was mitigated by the low flood frequency, and the likely recovery of the Tainter gates prior to site flooding. There were additional conservatisms which were not applied to the result but would reduce the risk. These included the fact that the plant would be shutdown prior to flooding impacting safety related equipment, which would reduce decay heat cooling required, and additional FLEX flooding strategies which could provide cooling even if the dam was lost. The risk increase due to the performance deficiency was $< 1.0E-6$ /year, a Green finding of very low safety significance. The licensee's analysis and full scope probabilistic risk assessment model produced a similar result. The inspectors determined that since the scoping of plant systems had occurred more than three years in the past, the finding did not represent current plant performance and therefore did not have a cross-cutting aspect associated with it.
Inspection Report# : 2016003 (*pdf*)

Significance:  Aug 19, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Keep EOP FRP-H.1 in Conformance with Plant Specific Guidelines

The NRC identified a non-cited violation of Technical Specification 5.4.1 for the licensee's failure to maintain emergency operating procedure (EOP) FRP-H.1, "Response to Loss of Secondary Heat Sink," in accordance with their commitment to implement EOPs based on plant specific technical guidelines. Specifically, the licensee was committed to upgrading their EOPs in accordance with the H.B. Robinson Unit 2 plant specific technical guidelines, and FRP-H.1 was not updated during implementation of engineering change (EC) 283171. In response, the licensee entered the issue into their corrective action program as action request 2047575 and updated FRP-H.1 to bring it into conformance with its basis document.

This performance deficiency was more than minor because it could lead to a more significant safety concern if left uncorrected. Specifically, the procedure would have been implemented as written during an event that required bleed and feed, and it was not demonstrated that one SI pump was adequate for core cooling. The finding required a detailed risk evaluation to be performed because the finding was not a deficiency affecting the design of a mitigating structure, system, or component (SSC), and the finding would represent a loss of system and/or function, because it was not demonstrated that one safety injection (SI) pump would be sufficient during bleed and feed operations. A detailed risk assessment determined the increase in core damage frequency due to the performance deficiency was less than $1E-6$ /year, a GREEN finding of very low safety significance. The team determined that the finding was indicative of current licensee performance, because the issue resulted from inadequate implementation of EC 283171, which was completed in 2014. A cross-cutting aspect of Teamwork [H.4.] in the Human Performance area was assigned because individuals and work groups did not communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety was maintained.

Inspection Report# : 2016008 (*pdf*)

Significance:  Aug 19, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Perform Appropriate Maintenance or Testing for the Dedicated Shutdown Transformer

The NRC identified a non-cited violation of Title 10 Code of Federal Regulations (10 CFR) Part 50.63, "Loss of all alternating current power," for the licensee's failure to meet their commitment to the guidance in NRC RG 1.155, "Station Blackout." Specifically, the licensee's preventive maintenance and testing program did not identify required tests and inspections, and was not implemented such that it demonstrated system readiness and reliability requirements would be met as required by RG 1.155. In response, the licensee entered the issue into their corrective action program as action request 2053938, and initiated actions to determine which vendor recommended activities were needed to be performed to meet their RG 1.155 commitments and began updating their PM schedule and maintenance procedures.

This performance deficiency was more than minor because it could lead to a more significant safety concern if left uncorrected. Specifically, transformer components degrade over time, and in the absence of appropriate testing and maintenance, could degrade to the point where the transformer may fail when called upon to mitigate an SBO. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component (SSC), and the SSC maintained its operability or functionality. The team determined that the finding was indicative of current licensee performance, because AR 643531 was written on November 11, 2013, which described that appropriate maintenance and testing was not being performed on the DS transformer, however, the impact on the station's RG 1.155 commitments was not evaluated. A cross-cutting aspect of Evaluation [P.2] in the Problem Identification and Resolution area was assigned because the licensee did not thoroughly evaluate the issue to ensure that the resolution addressed the cause and extent of condition commensurate with its safety significance. Inspection Report# : 2016008 (*pdf*)

Barrier Integrity

Significance: G Mar 31, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Perform General Visual Examinations of Containment Moisture Barriers Associated with Containment Liner Leak-Chase Test Connections

An NRC-identified Green non-cited violation (NCV) of 10 CFR Part 50.55a, "Codes and Standards," was identified for the failure to perform general visual examinations of moisture barriers in the containment leak-chase channel test connections in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME BPVC), Section XI, Subsection IWE. Following the inspectors' identification of this issue, the licensee initiated actions to conduct the required visual examinations during the March 2017 refueling outage and initiated actions to revise the containment inservice inspection (ISI) plan such that the required examinations will be performed in the future. This issue was entered into the licensee's corrective action program (CAP) as nuclear condition report (NCR) 02109909.

The failure to conduct the required visual examination of moisture barrier material in accordance with the ASME BPVC, Section XI, Subsection IWE, was a performance deficiency (PD). The finding was of more than minor significance because, if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, visual examinations of moisture barriers associated with the containment leak-chase channel test connections provide assurance that the containment metal liner and liner seam welds remain capable of performing its intended safety function. In the absence of such examinations, corrosive conditions at the moisture barrier (concrete-to-tubing interface) could go undetected. As a result, degradation of inaccessible portions of the containment liner could progress to challenge the containment operational capability. Using IMC 0609, Attachment 4, "Initial Characterization of Findings," the finding was determined to affect the Barrier Integrity Cornerstone because it involved ISI program examinations designed to identify degradation of the containment metal liner. The inspectors screened the finding using IMC 0609, Appendix A, "The Significance Determination Process (SDP) For Findings At-Power," "Exhibit 3 - Barrier Integrity Screening Questions," and determined that the finding was of very low safety significance (Green) because it did not represent an actual open pathway in the physical integrity of the containment. The inspectors reviewed this performance deficiency for cross-cutting aspects as required by IMC 0310, "Components With Cross-Cutting Aspects." The finding was determined to be reflective of present licensee performance because in 2014, the licensee did not take effective corrective actions to implement the ASME BPVC requirements in the Subsection IWE Program, when a reasonable opportunity was available through the review of NRC Information Notice (IN) 2014-07, which highlighted this industry-wide problem. Therefore, the finding was assigned a cross-cutting aspect in the resolution component of the problem identification and resolution cross-cutting area.

Inspection Report# : 2017001 (*pdf*)

Emergency Preparedness

Significance:  Aug 19, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Comply with TS Requirements for Containment High Range Radiation Monitors

The NRC identified a non-cited violation of Technical Specification (TS) 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," for the licensee's failure to maintain the operability of the containment radiation monitors (high range) (CHRRMs). In response to this issue, the licensee generated AR 2062735 and made appropriate staff aware of the expected radiation monitor response and re-evaluated the IDO/PDO in NCR 2052758, and determined the CHRRMs were inoperable, and entered the appropriate TS action statement.

This performance deficiency was determined to be more than minor because it was associated with the Facilities and Equipment attribute of the Emergency Preparedness Cornerstone and adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The team determined the finding was of very low safety significance (Green) using the flowchart in IMC 0609, App. B, Attachment 2, because the finding was a failure to comply with a non-risk significant planning standard and no planning standard function failure occurred since other parameters could be used to validate the indications from the CHRRMs. This finding was not assigned a cross-cutting aspect because the issue was not indicative of current licensee performance. Specifically, the failure to properly evaluate the operability implications of IN 97-45 on the Robinson's CHRRMs occurred in 1997 and 1998.

Inspection Report# : 2016008 (*pdf*)

Significance:  Aug 19, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Follow Operability Determination Process

The NRC identified a non-cited violation of Title 10 Code of Federal Regulations (10 CFR) 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to follow their operability determination procedure. Specifically, the licensee did not provide a high degree of assurance of operability in their immediate determination of operability (IDO) and did not perform a prompt determination of operability (PDO) as required when evaluating the operability of the containment radiation monitors (high range) (CHRRMs). In response to this issue, the licensee entered the issue into their corrective action program as AR 2055160, re-evaluated the IDO in NCR 2052758, and performed a detailed determination of operability in a PDO as required by their procedure.

This performance deficiency was more than minor because it was associated with the Facilities and Equipment Attribute of the Emergency Preparedness Cornerstone, and adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, an inadequate operability determination regarding the CHRRMs would adversely impact the licensee's ability to classify, assess, and develop the correct protective measures following an accident. The team determined the finding was of very low safety significance (Green) using the flowchart in IMC 0609, App. B, Attachment 2, because the finding resulted in a failure to comply with a non-risk significant planning standard and no planning standard function failure occurred. Specifically, failure to follow the operability determination procedure and adequately determine the operability of the CHRRMs resulted in the failure to provide and maintain adequate emergency equipment that supports the emergency response, however, no failure of the planning standard occurred because other parameters could be used to validate the indications from the CHRRMs. The team determined that the finding was indicative of current licensee performance, because the issue resulted from inadequate implementation of the licensee's operability determination process during the course of the inspection. A crosscutting

aspect of Operating Experience [P.5.] in the Problem Identification and Resolution Area was assigned because the organization did not systematically and effectively collect, evaluate, and implement relevant internal and external operating experience (OE) in a timely manner.

Inspection Report# : 2016008 (*pdf*)

Occupational Radiation Safety

Public Radiation Safety

Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

Miscellaneous

Current data as of : August 03, 2017

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