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Wolf Creek 1 – Quarterly Plant Inspection Findings

1Q/2018 – Plant Inspection Findings

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Initiating Events

Significance: **G** Dec 31, 2017

Identified By: NRCI

Item Type: NCV Non-Cited Violation (NCV)

Failure to Initiate a Condition Report for Boric Acid Evaluations

The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for failure to implement the operability and functionality assessment procedure. Specifically, as of October 12, 2016, the licensee identified boric acid coating on several control rod drive mechanisms, but failed to initiate a condition report to evaluate the effect of the condition on control rod drive mechanism operability. Immediate corrective actions included initiating Condition Report 115120 and documenting a detailed operability assessment to demonstrate operability of the control rod drive mechanisms.

The performance deficiency is more than minor, and therefore a finding, because if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern. Specifically, continued failure to write condition reports and evaluate boric acid contamination could have a worse outcome under different circumstances. The inspectors evaluated the finding using Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," and the transient initiator screening questions of Exhibit 1, "Initiating Events Screening Questions," and determined that this finding did not cause a reactor trip and loss of mitigation equipment; therefore, this finding screened to very low safety significance (Green). The inspectors determined that the finding has a safety conscious work environment cross-cutting aspect in the area of safety conscious work environment policy, in that an individual did not feel free to raise nuclear safety concerns without fear of retribution, with confidence that his/her concerns will be addressed. Specifically, an individual was reluctant to write a condition report to document

boric acid residue on control rod drive mechanisms because the individual believed leaders were not concerned, and the individual did not want to diminish the relationship the individual had with the leaders [S.1].

Inspection Report# : 2017004 (*pdf*)

Mitigating Systems

Significance: **G** Dec 31, 2017

Identified By: NRCI

Item Type: NCV Non-Cited Violation (NCV)

Failure to Provide Adequate Work Instructions for Preventive Maintenance

The inspectors identified a Green non-cited violation of Technical Specification 5.4.1.a, for the licensee's failure to provide adequate work instructions for preventive maintenance on safety-related equipment. Specifically, preventive maintenance work instructions to inspect and clean the mechanical interlock on the D containment cooler fan motor control lacked specific guidance for adequate lubrication and did not adequately consider equipment history and operating experience. This resulted in the failure of the 42T starter relay coil in the motor control circuit for the D containment cooler fan, and subsequent unavailability on January 31, 2017. The licensee's immediate actions included troubleshooting the motor control circuit, replacing the blown control power fuse for the motor control circuit, performing bench testing, installing a replacement 42T contactor to replace the damaged 42T contractor, and performing post maintenance testing of the D containment cooler fan. The licensee entered this issue into the corrective action program as Condition Reports 110725 and 111360.

The performance deficiency is more than minor, and therefore a finding, because it is 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 (i.e., core damage). The inspectors evaluated the finding using Exhibit 2, "Mitigating Systems Screening Questions," of Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," and determined this finding is not a deficiency affecting the design or qualification of a mitigating structure, system, or component that maintained its operability or functionality; the finding does not represent a loss of system and/or function; the finding does not represent an actual loss of function of at least a single train for greater than its Technical Specification-allowed outage time; and the finding does not represent an actual loss of function of one or more non-Technical Specification trains of equipment designated as high safety-significant. Therefore, the inspectors determined the finding was of very low safety significance (Green). Inspectors did not assign a cross-cutting aspect and determined the performance deficiency within the last three years, and the inspectors did not identify a reasonable opportunity within the last three years for the licensee to have identified the performance deficiency.

Inspection Report# : 2017004 (*pdf*)

Significance: **G** Nov 20, 2017

Identified By: NRCI

Item Type: NCV Non-Cited Violation (NCV)

Inadequate Evaluation of Spurious Valve Operation

The team identified a non-cited violation of License Condition 2.C.(5) for failure to implement and maintain in effect all provisions of the approved fire protection program. Specifically, the licensee failed to adequately evaluate the potential impacts on post-fire safe shutdown of two motor operated valves spuriously closing due to fire damage.

The failure to adequately evaluate the impact of pressure operated relief valve block valves spuriously closing on post-fire safe shutdown was 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. Because the finding affected the ability to reach and maintain safe shutdown conditions in case of a fire that led to control room evacuation and because the Phase 2 methodology of Inspection Manual Chapter 0609, Appendix F, was not appropriate for this finding, a senior reactor analyst performed a Phase 3 evaluation to determine the risk significance. The analyst determined this finding was of very low risk significance (Green). There is no cross-cutting aspect associated with this finding since the performance deficiency is not reflective of present performance (i.e., the performance deficiency occurred more than 3 years ago).

Inspection Report# : 2017008 (*pdf*)

Significance: **G** Nov 20, 2017

Identified By: NRCI

Item Type: NCV Non-Cited Violation (NCV)

Failure to Provide Adequate Emergency Lighting

The team identified a non-cited violation of License Condition 2.C.(5) for failure to provide emergency lighting along alternate routes plant operators are allowed to take during implementation of the procedure for control room evacuation due to fire.

The failure to provide 8-hour emergency lights along alternate routes used by operators during control room evacuation due to fire is a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external factors 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. The team evaluated this finding using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, because it affected the ability to reach and maintain safe shutdown conditions in case of a fire. The team assigned the finding to the post-fire safe shutdown category since it impacted the alternate shutdown element. The issue screened to Green because the reactor would be able to achieve and maintain hot shutdown because the operators are required to carry flashlights. Specifically, the team had reasonable assurance that the operators would be able to complete the evacuation procedure using handheld flashlights to access safe shutdown equipment. The finding is assigned a cross-cutting aspect in the area of human performance, associated with training, because the operators are not being trained on the access and egress routes that are provided with 8-hour emergency lights during implementation of the control room evacuation procedure due to fire to ensure the time critical actions can be met.

Inspection Report# : 2017008 (*pdf*)

Significance: **G** Nov 07, 2017

Identified By: NRCI

Item Type: NCV Non-Cited Violation (NCV)

Programmatic Failure to Scope Floor Drain Function within the Maintenance Rule Monitoring Program

The inspectors identified a Green non-cited violation of 10 CFR 50.65(b)(2)(ii), because the licensee did not adequately include nonsafety-related SSC functions within the scope of the maintenance rule monitoring program. Specifically, the licensee failed to adequately include within the scope of the maintenance rule monitoring program the function of draining. This scoping issue has resulted in a failure to monitor floor drain degradation and to provide reasonable assurance that safety-related SSCs in an estimated 76 rooms are capable of fulfilling their intended functions.

Immediate corrective actions included entering the condition into the corrective action program as Condition Report 116319 and later as Condition Report 116851.

The inspectors determined that the licensee's failure to meet the requirements of 10 CFR 50.65(b)(2)(ii) and appropriately place the function of draining, for nonsafety-related floor drains in up to 76 rooms containing safety-related SSCs, within the scope of the maintenance rule monitoring program was a performance deficiency. The performance deficiency was more than minor, because it is associated with the Protection Against External Factors 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 (i.e., core damage). The inspectors evaluated the finding using Exhibit 2, "Mitigating Systems Screening Questions," of Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," and determined the finding was of very low safety significance (Green). The inspectors determined that the finding did not have a cross-cutting aspect because the issue was not indicative of current performance. (Section 1R12)

Inspection Report# : 2017003 (*pdf*)

Significance: **G** Nov 07, 2017

Identified By: NRCI

Item Type: NCV Non-Cited Violation (NCV)

Failure to Ensure the Design Basis was Adequately Represented in the Technical Specification Bases

The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control, for the licensee's failure to establish adequate measures to ensure that the design bases are correctly translated into specifications, drawings, procedures, and instructions. Specifically, the licensee did not ensure the auxiliary feedwater system design basis was adequately represented in the Technical Specification Bases; as a result, the Technical Specification Bases and other station procedures allowed for one train of essential service water supply to the turbine-driven auxiliary feedwater pump to be removed from service without recognition that auxiliary feedwater operability was impacted. Immediate corrective actions included entering Condition Reports 113304 and 116852 into the corrective action program and incorporating a note on operations turnover documents to temporarily postpone applicable portions of the operations quarterly tasks. The licensee also completed a past operability review, and created

actions to develop a license amendment request to add a specific Technical Specification condition and submit for NRC approval.

The failure to ensure the auxiliary feedwater system design basis was adequately represented in the Technical Specification Bases was a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the design control 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 (i.e., core damage). The inspectors evaluated the finding using Exhibit 2, "Mitigating Systems Screening Questions," of Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," and determined this finding was of very low safety significance (Green). The inspectors determined that the finding has a problem identification and resolution cross-cutting aspect in the area of evaluation because the organization did not thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. This issue is indicative of current performance because the evaluation of Condition Report 111808 in May 2017 was a reasonable opportunity for the licensee to identify that the Technical Specification Bases was inadequate [P.2]. (Section 1R15)

Inspection Report# : 2017003 (*pdf*)

Significance: **G** Nov 07, 2017

Identified By: SR

Item Type: NCV Non-Cited Violation (NCV)

Failure to Verify Equipment or Systems are Capable of Performing Their Intended Design Function Following Maintenance

The inspectors reviewed a Green, self-revealed non-cited violation of Technical Specification 5.4.1.a for the licensee's failure to ensure that maintenance that can affect the performance of safety-related equipment was properly pre-planned and performed in accordance with written procedures, documented, instructions, or drawings appropriate to the circumstances. Specifically, the licensee failed to verify that the wiring in the transformer 7 primary differential protective relay was landed on the correct termination point, and as a result, the station experienced an unplanned loss of normal offsite power to bus NB01, the train A Class 1E electrical bus. The licensee took the immediate corrective actions of working with Westar to ensure the protective relay wiring termination issue for transformer 7 was identified and corrected, and that transformer 7 was returned to service. The licensee also updated procedure AP 21C-001 to include additional detail and steps that require work instructions for post maintenance testing of current transformer wiring to ensure independent verification of wiring terminations. The licensee entered the issue into the corrective action program as Condition Reports 109467 and 116849.

The licensee's failure to verify that the primary and secondary differential relay circuitry is capable of performing its intended design function following maintenance was a performance deficiency. The performance deficiency was more than minor because it affected the design control 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 (i.e., core damage). The inspectors evaluated the finding using Exhibit 3, "Mitigating Systems Screening Questions," of Inspection Manual Chapter 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase I Initial Screening and Characterization of Finding," and Appendix G, "Shutdown Operations

Significance Determination Process." The inspectors determined the finding was of very low safety significance (Green). The inspectors determined that the finding has a human performance cross-cutting aspect in the area of resources because leaders did not ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety. This issue is indicative of current performance because the issue occurred in the last three years [H.1]. (Section 4OA3)

Inspection Report# : 2017003 (*pdf*)

Significance: **G** Aug 10, 2017

Identified By: NRCI

Item Type: NCV Non-Cited Violation (NCV)

Failure to Declare Train A Component Cooling Water Inoperable

The inspectors identified a Green non-cited violation of Technical Specification Limiting Condition for Operation 3.7.7 for the licensee's failure to place the unit in MODE 3 within 78 hours with the train A component cooling water system inoperable. Specifically, the essential service water emergency make-up to component cooling water train A valve was not declared inoperable when it was out of service, and as a result, train A component cooling water was out of service for longer than its Technical Specification allowed outage time. The licensee's planned actions include revising Technical Specification Bases 3.7.7 and training operators on the proposed Technical Specification Bases revisions, and the licensee issued an "Essential Reading" document for operators to review. The licensee entered the issue into the corrective action program as Condition Report 111808.

The failure to declare train A component cooling water inoperable is a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the human 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 (i.e., core damage). The inspectors evaluated the finding using Exhibit 2, "Mitigating Systems Screening Questions," of Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," and determined the finding was of very low safety significance (Green). The inspectors determined that the finding has a human performance cross-cutting aspect in the area of challenge the unknown because individuals did not stop when faced with uncertain conditions, and risks were not evaluated and managed before proceeding. This issue is indicative of current performance because the creation and implementation of the subject clearance order occurred in the last three years.

Inspection Report# : 2017002 (*pdf*)

Significance: **G** May 12, 2017

Identified By: NRCI

Item Type: NCV Non-Cited Violation (NCV)

Failure to Provide Adequate Work Instructions for Preventive Maintenance

The inspectors reviewed a Green, self-revealed non-cited violation (NCV) of Technical Specification 5.4.1.a and Regulatory Guide 1.33 for the licensee's failure to provide adequate work instructions for preventive maintenance on safety-related equipment. Specifically, work instructions to inspect and clean the condensate drain lines on the class 1E air conditioner air handling units lacked guidance for adequately cleaning the drain line. This caused the unit to become

non-functional. The licensee took the immediate corrective action to clear the clogged condensate drain line on SGK05B, and entered the issue in the corrective action program as Condition Report 106416.

The failure to provide adequate work instructions for preventive maintenance on safety-related equipment is a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is 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 (i.e., core damage). In accordance with NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined this finding screened to Green. The inspectors determined that the finding has a problem identification and resolution cross-cutting aspect of resolution because the organization did not take effective corrective actions to address issues in a timely manner commensurate with their safety significance. This issue is indicative of current performance because neither the preventive maintenance change process was substantively changed nor were human performance errors associated with the preventive maintenance change corrected, and the same resolution inadequacies that resulted in the inadequate preventive maintenance instructions would be expected to occur.

Inspection Report# : 2017001 (*pdf*)

Barrier Integrity

Significance: **G** Aug 10, 2017

Identified By: NRCI

Item Type: NCV Non-Cited Violation (NCV)

Failure to Ensure Safety-Related Valves were Adequately Protected from Internal Flooding Hazards

The inspectors identified a Green non-cited violation of 10 Code of Federal Regulations Part 50, Appendix B, Criterion III, Design Control, for the licensee's failure to establish adequate measures to ensure that safety-related components remained capable of performing their functions. Specifically, the licensee did not have adequate preventive maintenance or testing tasks established to provide reasonable assurance that floor drains would not become clogged and impact the ability of train A safety-related components to perform their expected functions. As a result, a containment isolation valve was not adequately protected. The station's immediate corrective actions included entering the condition into the corrective action program, declaring the subject valves inoperable, and cleaning the debris from the clogged floor drains. The licensee created Work Order 17-429068-000 to evaluate and establish new preventive maintenance tasks for floor drains, and the licensee is continuing with, but had not yet completed, the remainder of the floor drain inspections for other safety-related areas.

The failure to establish adequate measures to ensure that floor drains in safety-related areas remained free of debris and safety-related components remained capable of performing their function is a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the structure, system, and component and barrier performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. The inspectors evaluated the finding using Exhibit 3, "Barrier Integrity Screening Questions," of Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," and determined this finding was of very low safety significance (Green). The inspectors determined that the finding has a problem identification and resolution cross-cutting aspect in the area of identification because individuals did not identify issues completely,

accurately, and in a timely manner in accordance with the program. Condition Report 90879, documented in January 2015, was an opportunity for the licensee to identify the inadequacy of the floor drain preventive maintenance and testing strategy and reflects current performance.

Inspection Report# : 2017002 (*pdf*)

Emergency Preparedness

Significance: **G** Dec 31, 2017

Identified By: NRCI

Item Type: NCV Non-Cited Violation (NCV)

Failure to Critique TSC and OSC Performance During a Biennial Exercise

The inspectors identified that the licensee failed to correct a deficiency in emergency response organization performance identified as a result of an exercise in accordance with the requirements of 10 CFR 50.47(b)(14). The failure to identify and correct a weakness occurring during an exercise is a performance deficiency within the licensee's ability to foresee and correct. The licensee failed to identify that the Technical Support Center and Operations Support Center did not fully understand plant conditions and did not properly utilize in-plant mitigation and repair teams to investigate the causes of equipment failures. The issue is not an immediate safety concern because the deficient performance occurred during an exercise. This issue was documented in licensee Condition Report 117567, dated November 17, 2017.

The finding is more than minor because it was associated with the emergency response organization performance cornerstone attribute and adversely affected the cornerstone objective. The licensee's ability to ensure that adequate measures will be taken to protect the health and safety of the public is degraded when weak emergency response organization performance is not corrected. The finding was evaluated using Inspection Manual Chapter 0609, Appendix B, dated September 22, 2015, and was determined to be of very low safety significance because the finding was a failure to comply with NRC requirements, was not a lost or degraded risk significant planning standard, and was not a loss of planning standard function. The performance deficiency was not a loss of planning standard function because the licensee appropriately critiqued some weaknesses. The finding was determined to have a cross-cutting aspect of evaluation in the area of problem identification and resolution because the licensee did not evaluate the deficient understanding of plant conditions and failure to utilize in-plant mitigation and repair teams as a performance weakness [P.2].

Inspection Report# : 2017004 (*pdf*)

Significance: **G** Jul 12, 2017

Identified By: NRCI

Item Type: NCV Non-Cited Violation (NCV)

Failure to Maintain Effectiveness of the Emergency Plan upon Loss of Containment High Radiation Monitoring

Green. The inspectors identified a Green, non-cited violation of 10 CFR 50.54(q)(2) which requires that a holder of a nuclear power plant operating license follow and maintain the effectiveness of an emergency plan that meets the requirements in Appendix E of this part and the risk significant planning standards of 10 CFR 50.47(b). Specifically,

from March 7, 2017, to July 12, 2017, Wolf Creek Generating Station's response to the loss of containment high radiation monitors failed to restore capability to classify emergency action levels during a loss-of-coolant accident or main-steam-line-break accident. In response to this issue, the licensee provided additional radiation survey monitoring measures and correlations to monitor radiation in the containment building. This finding was entered into the licensee's corrective action program as Condition Report CR 114274.

The inspectors determined that the failure to maintain the effectiveness of the emergency action levels by providing adequate preplanned methods and compensatory measures for the loss of the containment high range radiation monitors, in accordance with 50.54 (q)(2), was a performance deficiency. This finding was determined to be more than minor because it was associated with emergency response organization performance attribute of the Emergency Preparedness cornerstone and adversely affected the cornerstone objective. Specifically, the failure to maintain the effectiveness using appropriate compensatory measures adversely affected the objective of ensuring 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 finding was evaluated in accordance with Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process," dated September 22, 2015, because the finding was a failure to comply with risk significant planning standard 10 CFR 50.47(b)(4), "Emergency Classification System." The finding was compared to the finding examples in Section 5.4 of Inspection Manual Chapter 0609, Appendix B. The finding was determined to be of very low safety significance (Green) because emergency action levels were rendered ineffective such that any Site Area Emergency would not be declared for a particular off-normal event; however, because of other emergency action levels, an appropriate declaration could be made in a degraded manner. This finding had a cross-cutting aspect in the area of human performance associated with conservative bias because the licensee failed to use decision making-practices that emphasized prudent choices over those that are simply allowable. [H.14]

Inspection Report# : 2017007 (*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.

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