Columbia Generating Station – Quarterly Plant Inspection Findings

2Q/2017 – Plant Inspection Findings

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Initiating Events

Significance: G Jun 30, 2017
Identified By: Self-Revealing
Item Type: FIN Finding
Mechanism Operated Cell Switch Failure
The inspectors reviewed a self-revealed finding for the licensee's failure to follow plant Procedure SWP-CAP-01, "Corrective Action Program," that ensures corrective actions are timely. As a corrective action for failures associated with mechanism operated cell switches for nonsafety 4160 VAC circuit breakers in 2013 and 2015, the licensee assigned modifications to the mechanism operated cell switches but failed to implement them in a timely manner. Consequently, on July 20, 2016, circuit breaker E-CB-S/3 mechanism operated cell switches failed to change state resulting in a loss of a main feed pump and an unplanned runback to 70 percent reactor power. As corrective action, the licensee declared the startup transformer inoperable, modified the mechanism operated cell assembly for circuit breaker E-CB-S/3 to remove one switch, and performed post-maintenance testing. The licensee also initiated Action Request 352504 to perform an apparent cause review and address long-term corrective actions.

The failure to follow plant Procedure SWP-CAP-01, "Corrective Action Program," that ensures corrective actions are timely was a performance deficiency. The performance deficiency was more than minor because it affected the equipment performance attribute of the Initiating Event Cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the loss of major loads on E-SM-3 upset plant stability by causing a loss of feed and reactor runback transient. The inspector performed the initial significance determination using NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 1, "Initiating Events Screening Questions." The inspectors determined that the finding was of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. Specifically, the licensee remained at power and maintained diverse feed and condensate pumps.

This finding had a cross-cutting aspect in the area of human performance, consistent process, in that the licensee failed to use a systematic approach to make decisions including incorporating risk insights. Specifically, circuit breaker E-CB-S/3 is utilized at least monthly for emergency diesel generator surveillance testing and a failure could render the startup transformer inoperable. The mechanism operated cell assembly modification, recommended in 2013 and assigned for action in 2015, was not planned or scheduled as a work order at the time of the failure in 2016.
Inspection Report# : 2017002 *(pdf)*

Significance: G Sep 30, 2016
Identified By: Self-Revealing
Item Type: FIN Finding
Ineffective System Performance Monitoring Program For Plant Service Water Piping Fouling
The inspectors reviewed a self-revealing finding for the licensee's failure to follow plant procedure SYS-4-31, "System and Equipment Performance Monitoring and Trending Program," revision 11, that ensures system and component performance to permit early detection and predict equipment problems, and confirm the effectiveness of predictive, preventive, proactive, and corrective maintenance. The actions taken for piping supplied by plant service water were not effective in managing corrosion control. Specifically, the loss of the 2C condensate booster pump was due to a system performance monitoring program that did not permit early detection and predict fouling of internal surfaces of piping that cooled the lube oil coolers. Consequently, on August 5, 2016, the licensee reduced reactor power to approximately 60 percent power due to an inability to control lube oil temperature on the 2C condensate booster pump oil coolers which are cooled by plant service water. The licensee entered this issue into their corrective action program as Action Request 353210.

The failure to follow plant procedure SYS-4-31, "System and Equipment Performance Monitoring and Trending Program," that ensures that a system performance monitoring program will permit early detection of equipment problems, predict equipment problems, and help confirm the effectiveness of predictive, preventive, proactive, and corrective maintenance was a performance deficiency. Specifically, the loss of the 2C condensate booster pump was due to ineffective corrective actions and a system performance monitoring program that did not permit early detection related to fouling of internal surfaces of piping that supplied cooling water to the lube oil coolers. The performance deficiency was more than minor because it affected the equipment performance attribute of the Initiating Event Cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the inability to adequately cool the lube oil coolers for the condensate booster pump 2C upset plant stability by causing an unplanned plant transient. The inspector performed the initial significance determination using NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 1, "Initiating Events Screening Questions." The inspectors determined that the finding was of very low safety significance because the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. Specifically, the licensee maintained other feed and condensate pumps for mitigation since they were powered from diverse sources.

This finding had a cross-cutting aspect in the area of human performance, challenge the unknown, in that the licensee failed to challenge uncertain conditions. Specifically, since 1999 and as recent as 2012, despite a plant service water corrosion control program, piping supplied by plant service water has continued to corrode internally and challenge loads supported by plant service water.

Inspection Report# : 2016003 *(pdf)*

Mitigating Systems

Significance: G Jun 30, 2017
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Inadequate Corrective Actions Causes Failure of HPCS Room Normal Supply Fan
The inspectors reviewed a self-revealed, non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly identify and correct a condition adverse to quality. Specifically, since 2012, the licensee failed to implement prompt corrective actions to correct an adverse condition related to the use of a contactor coil for a motor starter in the high pressure core spray room normal supply fan. As an immediate corrective action, the licensee replaced the contactor for the high pressure core spray room normal supply fan. The licensee entered this issue into the corrective action program as Action Request 360595.

The failure to correct an adverse condition related to the use of a contactor coil for a motor starter in the HPCS room normal supply fan, though the licensee had an opportunity and plan to do so, was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it affected 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. Specifically, the licensee's failure to correct the use of a contactor coil for a motor starter in the high pressure core spray room normal supply fan resulted in an inoperable fan, high pressure core spray bus 4160 VAC switchgear, and high pressure core spray pump during the January 25, 2017, event when smoke was observed from the motor control center. The inspectors performed the initial significance determination using NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The inspectors determined that the finding was of very low safety significance (Green) because: (1) the finding was not a deficiency affecting the design or qualification of a mitigating system; (2) the finding did not represent a loss of system and/or function; (3) the finding did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time; and (4) the finding does not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours.

The inspectors determined that this finding did not have a cross-cutting aspect as the decision to not replace the contactor occurred in 2014 and was not reflective of current performance.
Inspection Report# : 2017002 *(pdf)*

Significance: G Apr 06, 2017
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Operators Fail to Follow Reactor Scram Procedure
The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to follow Procedure 3.3.1, "Reactor Scram," Revision 62. Specifically, the licensee failed to trip the main generator per Procedure PPM 3.3.1, Step 6.2.9, although it was required for a load rejection scram. As a result, during the scram on December 18, 2016, the station vital electrical busses SM-7 and SM-8 transferred to the backup transformer (and to the Division 3 Diesel Generator in the case of bus SM-4), instead of to the preferred electrical source, the startup transformer. As immediate corrective actions, the licensee implemented operations Night Order 75 that reinforced training to trip the main generator on a reactor scram. The licensee entered this issue into the corrective action program as Action Requests 359059 and 361029.

The failure to follow Procedure 3.3.1, "Reactor Scram," Revision 62, was a performance deficiency. This performance deficiency was more than minor, and therefore a finding, because it adversely affected the human performance 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. Specifically, the performance deficiency resulted in a reduction in the offsite power sources available to supply safety-related busses. The inspectors performed the initial significance determination using NRC Inspection Manual Chapter 0609, Attachment 04, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," dated June 19, 2012. The inspectors determined that the finding was of very low safety significance (Green) because: (1) the finding was not a deficiency affecting the design or qualification of a mitigating system; (2) the finding did not represent a loss of system and/or function; (3) the finding did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time; and (4) 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 in accordance with the licensee's maintenance rule program for greater than 24 hours.

This finding had a cross-cutting aspect in the area of human performance, training, in that the licensee failed to provide training and ensure knowledge transfer to maintain a knowledgeable, technically competent workforce and instill nuclear safety values. Specifically, the licensed operators did not understand the actions associated with the main generator in the scram procedure.
Inspection Report# : 2017008 *(pdf)*

Significance: G Apr 06, 2017
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Operators Fail to Follow Procedure Causes RCIC Overspeed Trip
The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to follow Procedure SOP-RCIC-INJECTION-QC, "RCIC RPV Injection - Quick Card," Revision 5. During a complicated reactor scram on December 18, 2016, licensed operators failed to open the RCIC turbine trip valve, RCIC-V-1, prior to initiating RCIC. As a result, RCIC tripped on overspeed, required local resetting, and led to licensed operations personnel injecting with the HPCS system, a nonpreferred injection source. As immediate corrective actions, the licensee implemented operations Night Order 76 that emphasized to operators the correct valve sequence for initiating RCIC flow. To address additional training aspects of this issue, the licensee updated the RCIC quick card procedure for clarity and added a training module to the next licensed operator requalification cycle on use of RCIC during transients. The licensee entered the unexpected trip of RCIC into the corrective action program as Action Requests 359064 and 359162.

The failure to follow Procedure SOP-RCIC-INJECTION-QC, "RCIC RPV Injection - Quick Card," Revision 5, was a performance deficiency. This performance deficiency was more than minor, and therefore a finding, because it adversely affected the human performance 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. The inspectors performed the initial significance determination using NRC Inspection Manual Chapter 0609, Attachment 04, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," dated June 19, 2012. The inspectors determined that the finding was of very low safety significance (Green) because: (1) the finding was not a deficiency affecting the design or qualification of a mitigating system; (2) the finding did not represent a loss of system and/or function; (3) the finding did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time; and (4) 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 in accordance with the licensee's maintenance rule program for greater than 24 hours.

This finding had a cross-cutting aspect in the area of human performance, training, in that the licensee failed to provide training and ensure knowledge transfer to maintain a knowledgeable, technically competent workforce and instill nuclear safety values. Specifically, the licensed operator did not understand the sequence of component manipulations for restarting RCIC using the quick card.
Inspection Report# : 2017008 *(pdf)*

Significance: G Apr 06, 2017
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Inadequate Corrective Actions Causes Failure of HPCS Restricting Orifice Gasket
The inspectors reviewed a self-revealed, non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly identify and correct a condition adverse to quality. Specifically, since 2009, the licensee failed to implement prompt corrective actions to correct an adverse condition related to the use of spiral wound gaskets for restricting orifices in the HPCS system. As an immediate corrective action, the licensee replaced the gasket for restricting orifice RO-5 under Work Order 02105645. The licensee entered this issue into the corrective action program as Action Request 359066. The failure to implement prompt corrective actions to correct an adverse condition related to the use of spiral wound gaskets for restricting orifices in the HPCS system was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it affected 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. Specifically, the licensee's failure to correct the use of incorrect spiral wound gaskets for restricting orifices in the HPCS system resulted in a failed gasket during the December 18, 2016 scram, introduction of foreign material into the suppression pool, and leakage into the HPCS room. The inspectors performed the initial significance determination using NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The inspectors determined that the finding was of very low safety significance (Green) because: (1) the finding was not a deficiency affecting the design or qualification of a mitigating system; (2) the finding did not represent a loss of system and/or function; (3) the finding did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time; and (4) the finding does not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours.

The inspectors determined that this finding did not have a cross-cutting aspect as the descision to use incorrect spiral wound gaskets occurred in 2009 and was not reflective of current performance.
Inspection Report# : 2017008 *(pdf)*

Significance: G Mar 01, 2017
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Evaluate and Control Nonconforming SSCs
The team identified a Green, Severity Level IV non-cited violation of 10 CFR Part 50 Appendix B Criteria VII and XV, for the licensee's failure to ensure materials intended for installation in safety-related applications conformed to procurement requirements or, if they did not, were adequately controlled and evaluated.

The failure to establish a program to evaluate and control nonconforming materials in accordance with the procurement requirements of 10 CFR 21 was a performance deficiency. This performance was more than minor because if left uncorrected it had the potential to become a more significant safety concern. Using Inspection Manual Chapter 0609 Appendix A, dated June 19, 2012, the team determined that this finding was of very low safety significance (Green) because it was a deficiency affecting the design or qualification of a structure, system, or component, and operability

was maintained. The finding has a conservative bias cross-cutting aspect in the human performance cross-cutting area because licensee personnel improperly rationalized the adequacy of the nonconforming components to perform their safety-related functions.

Because this performance deficiency was also a violation that impacted the regulatory process, in that the licensee accepted a change to plant design without appropriate evaluation and notification, it was also evaluated for traditional enforcement. The team determined that the violation was Severity Level IV because it was similar to several examples in Section 6.5.d of the NRC Enforcement Policy.

Inspection Report# : 2017007 *(pdf)*

Significance: G Dec 31, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Maintain Licensed Operator Examination Integrity
The inspectors identified a Severity Level IV, non-cited violation of 10 CFR 55.49, "Integrity of Examinations and Tests," associated with a Green finding, for the failure to ensure the integrity of simulator scenario tests, given as part of the 2015 licensed operator annual operating test, were maintained. The administration practices for the years 2015 and 2016 were reviewed to determine if they were consistent with industry standards used to enforce uniform conditions on the examination process. During the 2015 annual operating test, three licensed operators received two of three simulator scenario tests that had been previously administered to other licensed operators in previous weeks, and two licensed operators received two of two simulator scenario tests that had been previously administered to other licensed operators in previous weeks. Allowing more than 50 percent of an operating test section to be comprised of examination material previously administered on any other test in the same examination cycle is considered an examination integrity compromise. However, an evaluation of the 2015 examination results for the affected population showed that the compromise did not have an actual effect on the equitable and consistent administration of the examination. The licensee entered the finding into the corrective action program as Action Request 358890.

The failure of the licensee's training staff to maintain the integrity of examinations administered to licensed operations personnel was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it adversely affected the human performance 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. Using NRC Inspection Manual Chapter 0609, "Significance Determination Process," Attachment 4, Tables 1 and 2 worksheets, and the corresponding Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)," the finding was determined to have very low safety significance (Green). Although the 2015 finding resulted in a compromise of the integrity of the annual operating tests, with no compensatory actions immediately taken when the compromise should have been discovered, the equitable and consistent administration of the annual operating test was not actually affected by this compromise. In addition, the failure to meet 10 CFR 55.49 was evaluated through the traditional enforcement process, which resulted in its association with a Severity Level IV (SL-IV) violation consistent with Sections 2.2.4 and 6.4d of the NRC Enforcement Policy. This finding had a cross-cutting aspect in the area of resources associated with ensuring that procedures are adequate to ensure nuclear safety. A review of the procedure used to develop and administer requalification program examinations revealed that it did not specify the industry standards or guidelines that ensure that 50 percent or less of the examination material is repeated on a given examination in comparison to those examination elements used in previous weeks' examinations at the individual level [H.1].
Inspection Report# : 2016004 *(pdf)*

Significance: G Dec 31, 2016
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
RCIC Trips After Surveillances
The inspectors reviewed a self-revealed, non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to verify the adequacy of design of the reactor core isolation cooling (RCIC) system. Specifically, in 2001, the licensee implemented a design change to the keep-fill pump, RCIC-P-3, that changed its operation from continuous to intermittent, and did not verify the adequacy of the design for all methods of operation, including surveillance testing. Placing the RCIC-P-3 pressure switch downstream of the steam-driven RCIC pump's discharge check valve allows a subsequent hydraulic transient to depressurize RCIC piping below the system's low pressure trip set point. This failure to provide design control measures resulted in RCIC tripping three separate times when RCIC-P-3 was unable to keep up with hydraulic transients. In response to this condition, the licensee changed their operation of the keep-fill pump to running continuously and initiated Action Request 352594 to address long-term issues such as procedure revisions and system design changes.

The failure to verify the adequacy of design of the RCIC system was a performance deficiency. Specifically, in 2001, the licensee implemented a design change to the keep-fill pump, RCIC-P-3, that changed its operation from continuous to intermittent and did not verify the adequacy of the design for all methods of operation, including surveillance testing. The performance deficiency was more than minor, and therefore a finding, because it affected the design control attribute of the Mitigating System 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, this modification was inadequate, resulted in RCIC tripping three separate times when RCIC-P-3 was unable to keep up with hydraulic transients, and required compensatory measures to prevent future trips. The inspectors performed the initial significance determination using NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The inspectors determined that the finding was of very low safety significance (Green) because: (1) the finding was not a deficiency affecting the design or qualification of a mitigating system; (2) the finding did not represent a loss of system and/or function; (3) the finding did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time; and (4) the finding did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours.

The inspectors did not identify a cross-cutting aspect for this issue. Specifically, the design change occurred approximately 15 years ago and does not represent current licensee performance.
Inspection Report# : 2016004 *(pdf)*

Significance: G Dec 31, 2016
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Flow Indicating Switch Adjustment
The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to implement adequate work instructions for performing maintenance on residual heat removal flow indicating switch RHR-FIS-10B. Specifically, the flow indicating switch's upper drive arm and internal mechanical stops were improperly adjusted which led to increased internal friction. As a result, the associated minimum flow control valve, RHR-FCV-64B, failed to open when securing the system from a surveillance test. As an immediate corrective action, the licensee declared the Division 2 RHR system inoperable, replaced the flow indicating switch, and performed post-maintenance testing. The licensee entered this issue into the corrective action program as Action Request 355027.

The failure to implement adequate work instructions for performing maintenance on residual heat removal flow indicating switch RHR-FIS-10B was a performance deficiency. Specifically, the flow indicating switch's upper drive arm and internal mechanical stops were improperly adjusted which led to increased internal friction. As a result, the associated minimum flow control valve, RHR-FCV-64B, failed to open when securing the system from a surveillance test. The performance deficiency was more than minor, and therefore a finding, because it affected the 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, RHR-FIS-10B failed to change state, the Division 2 RHR system was declared inoperable, and the licensee replaced the flow indicating switch. The inspector performed the initial significance determination using NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The inspectors determined that the finding was of very low safety significance (Green) because: (1) the finding was not a deficiency affecting the design or qualification of a mitigating system; (2) the finding did not represent a loss of system and/or function; (3) the finding did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time; and (4) the finding did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours.

This finding had a cross-cutting aspect in the area of human performance, avoid complacency, in that the licensee failed to recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Specifically, the station technicians did not recognize their improper adjustment of the flow indicating switch could lead to failure although training was given on adjustments.
Inspection Report# : 2016004 *(pdf)*

Barrier Integrity
Emergency Preparedness
Occupational Radiation Safety

Significance: G Jun 30, 2017
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Failure to Conduct Adequate Surveys of Spent Filters Moved from the Spent Fuel Pool
The inspectors reviewed a self-revealed, non-cited violation of 10 CFR 20.1501 resulting from the licensee's failure to conduct radiation surveys necessary to establish appropriate controls to support movement of spent filters from the spent fuel pool to a shipping cask. This issue was entered into the licensee's corrective action program as Action Requests 356390 and 358265.

The licensee's failure to perform surveys necessary to establish appropriate controls to support the movement of filters from the spent fuel pool to a shipping cask was a performance deficiency. The performance deficiency was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of program and process and adversely affected the associated cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation. Specifically, the inadequate radiation surveys resulted in inadequate controls being implemented causing unplanned and unintended personnel dose. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined that the finding was of very low safety significance (Green), because it did not involve: (1) ALARA planning and controls; (2) an overexposure; (3) a substantial potential for overexposure; or (4) an impaired ability to assess dose. The finding had a cross-cutting aspect in the area of human performance, associated with work management, because the organization failed to implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, the licensee's organization and work processes failed to include the identification and

management of radiological risk commensurate with the spent fuel pool filter project and the need for strict coordination with different groups or job activities.
Inspection Report# : 2017002 *(pdf)*

Significance: G Mar 17, 2017
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Label or Provide Written Information for Items Stored in the Spent Fuel Pool
The team identified a non-cited violation of 10 CFR 20.1904 associated with the licensee's failure to ensure that each container of licensed material in the spent fuel was conspicuously marked commensurate with the radiological hazard or that the contents were identified by a readily available written record. The immediate corrective actions were to generate a condition report and assess the extent of the failure to label, or provide sufficient information for all items in the spent fuel pool, reevaluate the latest spent fuel pool annual inventory to identify any missing information, and update applicable procedures. This issue was entered into the corrective action program as Action Requests 357593 and 360148.

The licensee's failure to ensure that each container of licensed material stored in the spent fuel pool was conspicuously marked commensurate with the radiological hazard or that the contents were identified by a readily available written record was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the programs and process (exposure control) attribute of the Occupational Radiation Safety Cornerstone and adversely affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material. Specifically, accessing highly radioactive material of unknown radiological hazard could result in unanticipated dose rates and unplanned exposures. Using NRC Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance (Green) because it did not: (1) involve as low as is reasonable achievable (ALARA) planning or work controls, (2) did not involve an overexposure, (3) did not have a substantial potential to be an overexposure, and (4) the ability to assess dose was not compromised. The finding has a cross-cutting aspect in the area of human performance, associated with avoiding complacency, because licensee personnel failed to recognize and plan for the possibility of mistakes and inherent risk, even while expecting a successful outcome, once these items are accessed.
Inspection Report# : 2016009 *(pdf)*

Public Radiation Safety

Significance: TBD Mar 17, 2017
Identified By: Self-Revealing
Item Type: AV Apparent Violation
Shipment of a Typed B Quantity of Radioactive Material in a Type A Package
The team reviewed a self-revealed finding and apparent violation of 49 CFR 173.427 associated with a shipment of low specific activity (LSA) material consisting of radioactive filters, irradiated components, and dry active waste. The licensee failed to ensure that the radioactive contents in a radwaste liner did not exceed the radiation level requirements for shipping. Specifically, the licensee transported a Type A package containing a Type B quantity of radioactive

material as LSA even though it had an external radiation level of 2.1 rem/hr at a distance of 3 meters from the unshielded material, exceeding the 1 rem/hr at 3 meters limit for LSA. This issue was entered into the corrective action program as Action Requests 357593 and 360236.

The failure to ensure that the radioactive contents of a radwaste container of low specific activity material did not exceed the requirements for shipping was a performance deficiency. The performance deficiency was more than minor because it was associated with the program and process (Transportation Program) attribute of the Public Radiation Safety Cornerstone and adversely affected the cornerstone objective of ensuring adequate protection of public health and safety from exposure to radioactive material released into the public domain. Specifically, the licensee's failure to ensure that the contents of a radwaste container did not exceed the requirements for shipping resulted in radioactive material being transported in Type A packaging rather than the required Type B packaging. The finding was evaluated using Nuclear Regulatory Commission (NRC) Inspection Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," because Inspection Manual Chapter 0609, Appendix D, "Public Radiation Safety Significance Determination Process," does not specifically address the situation where a Type A package was used to ship quantities of radioactive material requiring a Type B package. In accordance with Appendix M, an initial qualitative bounding evaluation was performed. This was accomplished using the Transportation Branch of the "Public Radiation Safety Significance Determination Process" and examples from the Enforcement Policy.

The finding has a cross-cutting aspect in the area of human performance, associated with conservative bias, because licensee personnel did not use decision-making practices that emphasized prudent choices over those that were simply allowable. Specifically, on several occasions throughout the radwaste processing and packaging evolution for shipment No. 16-40, decisions were made that did not exhibit the appropriate conservative bias.

Inspection Report# : 2016009 *(pdf)*

Significance:  Mar 17, 2017
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Failure to Conduct Adequate Surveys of a Solid Radwaste Shipment
The team reviewed three examples of a self-revealed, non-cited violation of 10 CFR 20.1501 associated with the failure to conduct adequate surveys of the solid radwaste contents of a shipment that was packaged and transported for ultimate disposal. As a result of the inadequate surveys, the radwaste in shipment No. 16-40 was packaged in the incorrect type of shipping cask, the radwaste manifest and shipping paperwork contained numerous errors, and the waste was not correctly classified in accordance with 10 CFR Part 61. This issue was entered into the corrective action program as Action Request 357593.

The failure to conduct adequate surveys of the solid radwaste contents in a shipment that was packaged and transferred for ultimate disposal was a performance deficiency. The team determined that the performance deficiency was more than minor, and therefore a finding, because it was associated with the program and process aspect of the Public Radiation Safety Cornerstone and adversely affected the cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released in the public domain. Specifically, as a result of the inadequate surveys, the radwaste in shipment No. 16-40 was packaged in the incorrect type of shipping container, the radwaste manifest and shipping paperwork contained numerous errors, and the waste was misclassified in accordance with 10 CFR Part 61. Using NRC Inspection Manual Chapter 0609, Appendix D, "Public Radiation Safety Significance Determination Process," the violation was determined to be of very low safety significance (Green) because it was a finding in the transportation branch in which: (1) radiation limits were not exceeded, (2) there was no breach of the package during transit, (3) there were no Certificate of Compliance issues, and (4) the low-level burial ground nonconformance did not involve a 10 CFR 61.55 waste under-classification. The finding has a cross-cutting aspect in

the area of human performance, associated with documentation, because the organization failed to maintain complete, accurate, and up-to-date documentation.
Inspection Report# : 2016009 *(pdf)*

Significance: G Mar 17, 2017
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Provide an Accurate Shipping Manifest
The team identified a non-cited violation of 10 CFR 20.2006(b) for the licensee's failure to ship radwaste with an accurate shipping manifest. Specifically, the licensee failed to provide the correct identification number and proper shipping name, radionuclide activity, net waste volume, surface radiation level, and waste classification. The incorrect surface radiation levels resulted in rejection of the package and the licensee's immediate suspension from usage of the land disposal site at US Ecology. This issue was entered into the corrective action program as Action Requests 357593 and 359498.

The licensee's failure to ship radwaste intended for ultimate disposal with an accurate shipping manifest was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the program and process attribute of the Public Radiation Safety Cornerstone and adversely affected the cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive material released in the public domain. Specifically, inaccurate information on a shipping manifest could result in inappropriate handling of radioactive material while in the public domain. Using NRC Inspection Manual Chapter 0609, Appendix D, "Public Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance (Green) because: (1) radiation limits were not exceeded, (2) there was no breach of a package during transit, (3) it did not involve a certificate of compliance issue, (4) it was not a low-level burial ground nonconformance, and (5) it did not involve a failure to make notifications or provide emergency information. The finding has a cross-cutting aspect in the area of human performance, associated with avoiding complacency, because licensee personnel failed to recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes, by not implementing appropriate error reduction tools. Due to the lack of appropriate error prevention tools, inaccurate survey data was provided to the vendor and errors in the waste characterization and shipping manifest were not identified in a timely fashion.
Inspection Report# : 2016009 *(pdf)*

Significance: G Mar 17, 2017
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure of the QA Program to Assure Compliance with 10 CFR 61.55 and 10 CFR 61.56
The team identified a non-cited violation of 10 CFR Part 20, Appendix G, for the failure to manage a quality assurance program to ensure compliance with 10 CFR 61.55 and 10 CFR 61.56. Additionally, licensee management failed to effectively evaluate the significance of quality assurance audit findings in the area of radwaste processing and radioactive material shipments.

The failure to manage a quality assurance program to assure compliance with 10 CFR 61.55 and 10 CFR 61.56 was a performance deficiency. The team determined that the performance deficiency was more than minor, and therefore a finding, because it was associated with the Public Radiation Safety Cornerstone attribute of program and process and adversely affected the cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released in the public domain. Specifically, the failure to manage quality assurance activities as part of the radwaste processing and packaging program resulted in wastes that were not properly classified or did not possess the proper characteristics for burial. Using NRC Inspection Manual Chapter 0609, Appendix D, "Public

Radiation Safety Significance Determination Process," the violation was determined to be of very low safety significance (Green) because it was a finding in the transportation branch in which: (1) radiation limits were not exceeded, (2) there was no breach of the package during transit, (3) there were no Certificate of Compliance issues, and (4) the low-level burial ground nonconformance did not involve a 10 CFR 61.55 waste under-classification. The finding has a cross-cutting aspect in the area of human performance, associated with avoiding complacency, because licensee personnel failed to recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes, by not implementing appropriate error reduction tools, such as a proper quality assurance program. Specifically, the licensee has failed to ensure the appropriate level of quality assurance/quality control oversight and verification with respect to risk-significant radwaste processing and radioactive material shipment activities.
Inspection Report# : 2016009 *(pdf)*

Significance: G Mar 17, 2017
Identified By: NRC
Item Type: FIN Finding
Failure to Follow Procedure and Perform a Root Cause Evaluation to Assess the Causes of a Radwaste Shipping Event
The team identified a finding for the failure to follow the requirements of
Procedure SWP-CAP-06, "Condition Report Review," when determining the type of cause evaluation required to assess the causes of the higher than expected dose rates on a radwaste container. Specifically, Procedure SWP-CAP-06 required that if an event has high risk and high uncertainty, the level of evaluation required is a root cause evaluation. However, the licensee failed to adequately assess the uncertainty associated with the causes of the event and performed an apparent cause evaluation rather than a root cause evaluation. The licensee entered this finding into the corrective action program as Action Request 360236.

The failure to follow the requirements of Procedure SWP-CAP-06 when determining the type of cause evaluation required to assess the higher than expected dose rates on a radwaste container and performing an apparent cause evaluation instead of a root cause evaluation was a performance deficiency. The team determined that the performance deficiency was more than minor, and therefore a finding, because it was associated with the Public Radiation Safety Cornerstone attribute of program and process, and adversely affected the cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released in the public domain. Specifically, the failure to adequately assess the causes of the event left the licensee vulnerable to future radwaste processing and transportation errors of significance. Using NRC Inspection Manual Chapter 0609, Appendix D, "Public Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance (Green). The finding has a cross-cutting aspect in the area of problem identification and resolution, associated with evaluation, because the licensee failed to thoroughly evaluate the issue to ensure resolutions address causes and extent of conditions commensurate with their safety significance.

Inspection Report# : 2016009 *(pdf)*

Significance: G Mar 17, 2017
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Failure to Transfer Byproduct Material to a Disposal Facility in Accordance with the Terms of the Facility's License
The team reviewed a self-revealed non-cited violation of 10 CFR 30.41(b)(5) for the failure to transfer byproduct material to an authorized waste disposal facility in accordance with the terms of the facility's license. Specifically, License Condition No. 22.C of the US Ecology license required that all radwaste shall be packaged in such a manner

that waste containers received at the facility do not show an increase in the external radiation levels as recorded on the manifest, within instrument tolerances. On November 9, 2016, the licensee transferred byproduct material to US Ecology for disposal; the disposal facility's surveys revealed that the dose rate on contact with the waste liner was 90 rem per hour, whereas the manifest recorded a dose
rate 11.8 rem per hour. The licensee retrieved the shipment, stored it safely, and entered the condition into the corrective action program as Action Request 357593.

The failure to transfer byproduct material to a low-level radwaste disposal facility in accordance with the facility's license was a performance deficiency. The performance deficiency was more than minor because it was associated with the program and process attribute of the Public Radiation Safety Cornerstone and adversely affected the associated cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. Using NRC Inspection Manual Chapter 0609, Appendix D, "Public Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance (Green) because it was a low-level burial ground nonconformance and a 10 CFR 61.55 waste under-classification; however, it was not Class C waste or greater and the waste did conform to the waste characteristics of 10 CFR 61.56. The finding has a cross-cutting aspect in the area of human performance, associated with conservative bias, because station personnel failed to use decision-making practices that emphasize prudent choices over those that are simply allowed considering the licensee had multiple opportunities to re-evaluate the shipment and determine the appropriate requirements.

Inspection Report# : 2016009 *(pdf)*

Significance: G Mar 17, 2017
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Failure to Minimize Void Spaces in a Radioactive Waste Package
The team reviewed a self-revealed non-cited violation of 10 CFR 61.56(a)(3) for the licensee's failure to assure that void spaces within the waste packages were reduced to the extent practicable. Specifically, a shipment of dry active waste sent to US Ecology in May 2016 arrived at the disposal facility with voids in excess of 15 percent of the total waste volume, contrary to the requirements of US Ecology's Radioactive Material License WN-I019-2, License Condition No. 23. Corrective actions included inspecting the other containers from waste shipment No.16-27 and testing each container for voids. The licensee documented this issue in their corrective action program as Action Request 352217 and performed an apparent cause evaluation.

The failure to ship radwaste for disposal without reducing void spaces to the extent practicable was a performance deficiency. The team determined that the performance deficiency was more than minor because it adversely affected the Public Radiation Safety Cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released in the public domain. Specifically, the failure to ensure that void spaces were removed in the radwaste container shipped to US Ecology subjected the disposal facility to the possibility of improper disposal of the waste, in that, the package was susceptible to stability issues. Using NRC Inspection Manual Chapter 0609, Appendix D, "Public Radiation Safety Significance Determination Process," the violation was determined to be of very low safety significance (Green) because: (1) radiation limits were not exceeded, (2) there was no breach of the package during transit, (3) there were no Certificate of Compliance issues, and (4) the low-level burial ground nonconformance did not involve a 10 CFR 61.55 waste under-classification. The finding has a cross-cutting aspect in the area of human performance, associated with teamwork, because individuals and work groups failed to communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained.
Inspection Report# : 2016009 *(pdf)*

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 : September 05, 2017

Page Last Reviewed/Updated Wednesday, June 07, 2017