



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

December 21, 2020

Mr. Brad Sawatzke
Chief Executive Officer
Energy Northwest
MD 1023
P.O. Box 968
Richland, WA 99352

**SUBJECT: COLUMBIA GENERATING STATION – REVISED INTEGRATED INSPECTION
REPORT 05000397/2020003**

Dear Mr. Sawatzke:

On September 30, 2020, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Columbia Generating Station. The results of this inspection were originally issued in a report, dated October 28, 2019 (Agencywide Document Access and Management System (ADAMS) Accession No. ML20302A231).

The NRC staff subsequently determined that due to an administrative oversight, the inspection activities associated with Inspection Procedure 71153, "Follow-up of Events and Notices of Enforcement Discretion," were documented as one sample each under event follow-up (IP Section 03.01) and personnel performance (IP Section 03.03), when in fact it should have been documented as two samples under personnel performance. The revised inspection report correcting this error is enclosed. This change had no impact on the findings documented in this report, but consistent with NRC processes, this report is being reissued in whole.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

Jeffrey E. Josey, Chief
Reactor Projects Branch A
Division of Reactor Projects

Docket No. 05000397
License No. NPF-21

Enclosure:
As stated

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COLUMBIA GENERATING STATION – REVISED INTEGRATED INSPECTION
 REPORT 05000397/2020003 – DECEMBER 21, 2020

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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Number: 05000397

License Number: NPF-21

Report Number: 05000397/2020003

Enterprise Identifier: I-2020-003-0011

Licensee: Energy Northwest

Facility: Columbia Generating Station

Location: Richland, WA

Inspection Dates: July 1, 2020 to September 30, 2020

Inspectors: A. Patz, Senior Resident Inspector
C. Roettgen, Senior Resident Inspector
L. Merker, Resident Inspector
N. Greene, Senior Health Physicist
J. O'Donnell, Senior Health Physicist
D. Antonangeli, Health Physicist
B. Tharakan, Technical Assistant

Approved By: Jeffrey E. Josey, Chief
Reactor Projects Branch A
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at Columbia Generating Station, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information.

List of Findings and Violations

Failure to Perform an Adequate Radiation Survey to Identify and Control a High Radiation Area			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Occupational Radiation Safety	Green NCV 05000397/2020003-01 Open/Closed	[H.14] - Conservative Bias	71124.01
<p>The inspectors reviewed a self-revealed, Green, non-cited violation of 10 CFR 20.1501(a), for the licensee's failure to perform an adequate radiological survey and identify a high radiation area. Specifically, on May 30, 2019, Radiation Protection personnel were notified by a radiation worker about an unanticipated self-reading dosimeter dose rate alarm while the worker was decontaminating equipment within a posted high contamination area (HCA) on the refuel floor (606-foot elevation of the reactor building). Radiation Protection personnel did not perform a survey to verify the radiological conditions in the work area and allowed the work to continue. The workers were later asked to exit the area when it was determined that the work could not be completed within the allotted dose limit set point.</p>			

Failure to Follow ALARA Planning Procedures Resulting in Unplanned Dose on a Work Activity			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Occupational Radiation Safety	Green NCV 05000397/2020003-02 Open/Closed	[H.5] - Work Management	71124.02
<p>The inspectors reviewed a self-revealed, Green, non-cited violation Technical Specification (TS) 5.4.1 because the licensee failed to follow their as low is reasonably achievable (ALARA) planning procedures resulting in unplanned dose while performing the control rod drive mechanism (CRDM) replacement work. Specifically, the licensee's procedure instructed them to obtain data on the actual radiological conditions in the work area prior to commencement of the job and determine the effective dose rate using corrected historical data for the current scope and radiological conditions in the radiation work permit (RWP) planning phase. The licensee initially planned the job for approximately 6.850 person-Rem, including under vessel work, whereas the actual dose accrued to complete the work activity was 10.752 person-Rem.</p>			

Additional Tracking Items

None.

PLANT STATUS

The reactor unit began the inspection period at 40 percent power per economic dispatch. On July 5, 2020, reactor power was raised to 85 percent power. On July 6, 2020, the reactor was returned to 100 percent power. On July 7, 2020, reactor power was reduced to 85 percent for a control rod pattern adjustment and then returned to 100 percent power. On September 15, 2020, plant power was reduced to 81 percent due to a high level trip of feedwater heater 2B with subsequent trips of feedwater heaters 2C, 3C, 4A, 4B, and 4C. On September 16, 2020, the reactor was returned to 100 percent power. On September 26, 2020, plant power was reduced to 80 percent to perform a control rod sequence exchange and maintenance on an adjustable speed drive channel before returning to 90 percent power; plant power was again reduced to 79 percent to recover the adjustable speed drive channel and then returned to 100 percent power where it stayed for the remainder of the inspection period.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards. Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), resident and regional inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time, the resident inspectors performed periodic site visits each week, increasing the amount of time on site as local COVID-19 conditions permitted. As part of their onsite activities, resident inspectors conducted plant status activities as described in IMC 2515, Appendix D; observed risk significant activities; and completed onsite portions of IPs. In addition, resident and regional baseline inspections were evaluated to determine if all or portions of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In some cases, portions of an IP were completed remotely and on site. The inspections documented below met the objectives and requirements for completion of the IP.

REACTOR SAFETY

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) High pressure core spray system following annual maintenance on August 3, 2020
- (2) Diesel generator 2 during diesel generator 1 annual maintenance on August 13, 2020

- (3) Standby service water system A during standby service water system B annual maintenance on September 21, 2020
- (4) Reactor core isolation cooling system following annual maintenance on September 24, 2020

Complete Walkdown Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated system configurations during a complete walkdown of diesel generator 1 following annual maintenance on August 6, 2020.

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (6 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

- (1) Fire Area RC-10/U, main control room, on July 14, 2020
- (2) Fire Areas DG-3/2, DG-5/2, and DG-9/2; diesel generator 2 room, diesel oil storage tank access room, and day tank room; on July 27, 2020
- (3) Fire Area R-3/#, high pressure core spray system pump room, on July 28, 2020
- (4) Fire Area DG-2/1, diesel generator 1 room, on August 4, 2020
- (5) Fire Area RC-3/1, vertical cable chase room, on September 11, 2020
- (6) Fire Areas DG-1/1 and DG-10/#, diesel generator 3 room and deluge valve equipment room, on September 22, 2020

Fire Brigade Drill Performance Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated fire brigade performance during an annual fire drill on August 26, 2020.

71111.07A - Heat Sink Performance

Annual Review (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated readiness and performance of diesel generator 2 heat exchangers DCW-HX-1B1 and DCW-HX-1B2 on September 30, 2020.

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

- (1) The inspectors observed and evaluated licensed operator performance in the control room during reactor power changes for an unexpected loss of feedwater level controller 5A on September 15, 2020, and to perform a control rod sequence exchange and maintenance on an adjustable speed drive channel on September 26, 2020.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

- (1) The inspectors observed and evaluated a licensed operator requalification training drill (Crew E) on July 27, 2020.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (4 Samples)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components (SSCs) remain capable of performing their intended function:

- (1) High pressure core spray system on July 31, 2020
- (2) Diesel generator 1 on August 13, 2020
- (3) Reactor core isolation cooling system on September 21, 2020
- (4) Standby service water system B on September 28, 2020

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (6 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed:

- (1) Yellow risk for backup transformer maintenance, week of July 20, 2020
- (2) Yellow risk for high pressure core spray system maintenance, week of July 27, 2020
- (3) Yellow risk for diesel generator 1 maintenance, week of August 5, 2020
- (4) High risk for transformer E-TR-8A/1 replacement on September 13, 2020
- (5) Yellow risk for reactor core isolation cooling system maintenance, week of September 14, 2020
- (6) Yellow risk for standby service water system B maintenance, week of September 21, 2020

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (6 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

- (1) Low oil pressure and metal shavings in oil filter of control room emergency chiller 1B on August 4, 2020
- (2) Containment vacuum breaker 1EF abnormal indication on August 6, 2020
- (3) Inverter 3B abnormal indication and voltage transient following attempted transfer from inverter 3A on August 13, 2020
- (4) Annual standby service water flow balance out of specification on August 25, 2020
- (5) Isolation capability of motor-operated valves RHR-V-9 and RCIC-V-22 on August 27, 2020
- (6) Electrical power panel E-PP-8AE low voltage on September 1, 2020

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (6 Samples)

The inspectors evaluated the following post-maintenance test activities to verify system operability and functionality:

- (1) Control room emergency chiller 1B low oil pressure on July 28, 2020
- (2) High pressure core spray system on July 31, 2020
- (3) Diesel generator 1 on August 5, 2020
- (4) Control room emergency chiller 1B low oil pressure on August 26, 2020
- (5) Reactor core isolation cooling system on September 21, 2020
- (6) Standby service water system B on September 22, 2020

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (2 Samples)

- (1) Work Orders 02140807 and 02140808, condensate storage tanks A and B inspection for license renewal, on September 28, 2020
- (2) OSP-FLEX-Q704, diesel generator 4 quarterly surveillance, on September 30, 2020

Inservice Testing (IP Section 03.01) (1 Sample)

- (1) OSP-SGT/IST-Q701, standby gas treatment valve quarterly surveillance, on August 10, 2020

71114.06 - Drill Evaluation

Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated the emergency planning drill (Emergency Response Organization Team B) on August 25, 2020.

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

COVID-19 pandemic conditions impacted the NRC's ability to conduct the inspection as scheduled. As a result, onsite inspection of appropriately risk-informed samples was not available. Therefore, IP 71124.01 is considered complete in accordance with IMC 0306, Section 06.08.f.3.

Radiological Hazard Assessment (IP Section 03.01) (1 Partial)

- (1) (Partial)
The inspectors remotely evaluated how the licensee identifies the magnitude and extent of radiation levels and the concentrations and quantities of radioactive materials and how the licensee assesses radiological hazards.

Instructions to Workers (IP Section 03.02) (1 Partial)

- (1) (Partial)
The inspectors remotely evaluated radiological protection-related instructions to plant workers.

Contamination and Radioactive Material Control (IP Section 03.03) (1 Partial)

The inspectors evaluated licensee processes for monitoring and controlling contamination and radioactive material.

- (1) (Partial)
Inspectors reviewed condition reports, procedures, inventory, and surveys remotely for items stored in the spent fuel pool.

Radiological Hazards Control and Work Coverage (IP Section 03.04) (2 Partials)

The inspectors evaluated in-plant radiological conditions during facility walkdowns and observation of radiological work activities.

- (1) (Partial)
Inspectors remotely reviewed monitoring data, procedures, and radiation work permits. The radiation work permits associated with Refueling Outage 24 in-vessel work, wet work, spent fuel pool work, and Rx Cavity work were reviewed.
- (2) (Partial)
The inspectors remotely reviewed electronic alarming dosimeter set points for radiation work permits associated with Refueling Outage 24 and verified set points were based on operating experience or historical outage data.

High Radiation Area and Very High Radiation Area Controls (IP Section 03.05) (2 Partials)

The inspectors evaluated licensee controls of the following High Radiation Areas and Very High Radiation Areas:

- (1) (Partial)
Inspectors remotely reviewed high radiation area condition reports relative to areas on the 606-foot elevation of the Reactor Building.
- (2) (Partial)
Inspectors remotely reviewed high radiation area condition reports relative to areas on the 441-foot elevation of the turbine building.

Radiation Worker Performance and Radiation Protection Technician Proficiency
(IP Section 03.06) (1 Partial)

- (1) (Partial)
Inspectors remotely reviewed job coverage procedures, surveys, and radiation work permits.

71124.02 - Occupational ALARA Planning and Controls

Radiological Work Planning (IP Section 03.01) (5 Samples)

The inspectors evaluated the integration of as low as is reasonably achievable planning into the following work activities:

- (1) RWP 30004256, "R24 Wet Work/Reactor Dive Inspection (Divers) - LHRA/High Risk"
- (2) RWP 30004318, "R24 Control Rod Drive Mechanism (CRDM) Undervessel Remove and Replace - LHRA/High Risk"
- (3) RWP 30004328, "R24 Steam Tunnel (ST)/VR/DCA/Rebuild Room Miscellaneous Work - High Risk"
- (4) RWP 30004336, "R24 Drywell/ST Shielding Install/REM and Support Tasks - LHRA"
- (5) RWP 30004347, "R24 Drywell Main Steam Relief Valve (MSRV) Maintenance - LHRA"

Verification of Dose Estimates and Exposure Tracking Systems (IP Section 03.02) (5 Samples)

The inspectors evaluated dose estimates and exposure tracking.

- (1) RWP 30004256, "R24 Wet Work / Reactor Dive Inspection (Divers) - LHRA/High Risk"
- (2) RWP 30004318, "R24 Control Rod Drive Mechanism (CRDM) Undervessel (UV) Remove and Replace - LHRA/High Risk"
- (3) RWP 30004319, "R24 CRDM UV Support - LHRA"
- (4) RWP 30004347, "R24 Drywell MSRV Maintenance - LHRA"
- (5) RWP 30004350, "R24 Steam Tunnel MSIV Maintenance and Refurb Tasks - LHRA"

71124.03 - In-Plant Airborne Radioactivity Control and Mitigation

Permanent Ventilation Systems (IP Section 03.01)

The inspectors were unable to evaluate the configuration of permanently installed ventilation systems.

Temporary Ventilation Systems (IP Section 03.02)

The inspectors were unable to evaluate the configuration of temporary ventilation systems.

Use of Respiratory Protection Devices (IP Section 03.03) (1 Sample)

- (1) The inspectors remotely evaluated the licensee's use of respiratory protection devices.

Self-Contained Breathing Apparatus for Emergency Use (IP Section 03.04) (1 Sample)

- (1) The inspectors remotely evaluated the licensee's use and maintenance of self-contained breathing apparatuses.

71124.04 - Occupational Dose Assessment

Source Term Characterization (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated licensee performance as it pertains to radioactive source term characterization.

External Dosimetry (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated licensee performance as it pertains to external dosimetry that is used to assign occupational dose.

Internal Dosimetry (IP Section 03.03) (1 Sample)

The inspectors evaluated the following internal dose assessments for actual internal exposures:

- (1) Dose assessment for an individual potentially exposed to airborne radioactivity while working on bleed steam valves in the TG 471-foot building on June 8, 2019. The licensee documented the issue I AR 00395101.

Special Dosimetric Situations (IP Section 03.04) (3 Samples)

The inspectors evaluated the following special dosimetric situations:

- (1) EDEX dose assessment and redacted NRC Form 5 for individuals using multipack dosimetry during the following RWP activity:
 - RWP 30004258, "R24 Wetwork/Reactor Dive Inspection (Divers) - LHRA/High Risk"
- (2) EDEX dose assessment and redacted NRC Form 5 for individuals using multipack dosimetry during the following RWP activity:
 - RWP 30004447, "2018 Reactor 606 Badger Testing"
- (3) EDEX dose assessment and redacted NRC Form 5 for individuals using multipack dosimetry during the following RWP activity:
 - RWP 30004470, "2019 Reactor 522 and Reactor 548 RWCU Flow - LHRA/High Risk"

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

MS06: Emergency AC Power Systems (IP Section 02.05) (1 Sample)

- (1) (07/01/2019 – 06/30/2020)

MS07: High Pressure Injection Systems (IP Section 02.06) (1 Sample)

(1) (07/01/2019 – 06/30/2020)

MS08: Heat Removal Systems (IP Section 02.07) (1 Sample)

(1) (07/01/2019 – 06/30/2020)

MS09: Residual Heat Removal Systems (IP Section 02.08) (1 Sample)

(1) (07/01/2019 – 06/30/2020)

MS10: Cooling Water Support Systems (IP Section 02.09) (1 Sample)

(1) (07/01/2019 – 06/30/2020)

OR01: Occupational Exposure Control Effectiveness Sample (IP Section 02.15) (1 Sample)

(1) (04/01/2019 – 06/30/2020)

PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual
Radiological Effluent Occurrences (RETS/ODCM) Radiological Effluent Occurrences Sample
(IP Section 02.16) (1 Sample)

(1) (04/01/2019 – 06/30/2020)

71153 - Followup of Events and Notices of Enforcement Discretion

Personnel Performance (IP Section 03.03) (2 Samples)

- (1) The inspectors evaluated licensee response to an inverter 3B abnormal indication and voltage transient following attempted transfer from inverter 3A and resultant 8-hour and 12-hour technical specification shutdown action statement entries on July 10, 2020.
- (2) The inspectors evaluated operator response to a rapid downpower due to a high level trip of feedwater heater 2B with subsequent trips of feedwater heaters 2C, 3C, 4A, 4B, and 4C on September 15, 2020.

INSPECTION RESULTS

Failure to Perform an Adequate Radiation Survey to Identify and Control a High Radiation Area			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Occupational Radiation Safety	Green NCV 05000397/202003-01 Open/Closed	[H.14] - Conservative Bias	71124.01
The inspectors reviewed a self-revealed, Green, non-cited violation of 10 CFR 20.1501(a), for the licensee's failure to perform an adequate radiological survey and identify a high radiation area. Specifically, on May 30, 2019, radiation protection personnel were notified by a			

radiation worker about an unanticipated self-reading dosimeter dose rate alarm while the worker was decontaminating equipment within a posted high contamination area (HCA) on the refuel floor (606-foot elevation of the reactor building). Radiation protection personnel did not perform a survey to verify the radiological conditions in the work area and allowed the work to continue. The workers were later asked to exit the area when it was determined that the work could not be completed within the allotted dose limit set point.

Description: On May 30, 2019, two laborers were assigned the task of decontaminating a highly contaminated component removed from the reactor vessel. The component was a ring track used for mounting a specialty camera used to perform in-vessel visual inspections. During the dayshift, the ring track was removed from the reactor cavity and placed in a high contamination area (HCA) within a posted radiation area (RA) on the refuel floor (606-foot elevation of the reactor building). At approximately 5:30 pm, dayshift radiation protection personnel began turnover to nightshift; however, a face-to-face turnover between the dayshift and nightshift Refuel Lead Techs (RLTs) did not occur. A telephone discussion was held instead. The postings around the ring track were not discussed during the telephone turnover. The nightshift RLT assumed the ring track was within a posted high radiation area, but did not attempt to validate this assumption.

At approximately 6:30 pm, the nightshift RLT briefed the two laborers about the ring track decontamination work. The Radiation Work Permit (RWP) authorized entry into posted high radiation areas (HRAs) and HCAs; however, the laborers were not briefed on area dose rates exceeding 100 millirem per hour and the briefing did not cover the potential for decontamination rags to generate significant dose rates. Prior to the decontamination work, surveys of the HCA indicated dose rates up to 60 millirem per hour at 30 cm from the ring track. The RWP established self-reading dosimeter (SRD) alarm setpoints at 40 millirem for dose and 200 millirem per hour for dose rate. The laborers were instructed to use multiple radioactive material (RAM) bags to ensure that the rags did not aggregate and create a dose concern; however, previous operating experience where aggregated decontamination rags created unposted HRAs was not discussed. At the briefing, the RLT did not specify which technician on the refuel floor would be providing coverage in the field, and no one on the refuel floor was assigned this responsibility. Initially, there were two radiation protection technicians (RPTs A&B) assigned to the refuel floor and later a second crew (RPTs C&D) arrived to relieve RPTs A&B.

When the laborers arrived at the refuel floor to prepare for the decontamination work, RPT B helped them don the proper protective clothing and equipment, including powered air-purifying respirators. After gathering additional supplies, the decontamination work commenced and RPT B left to attend to another job. The dose accrued by the laborers was also being monitored remotely by the RPTs.

At approximately 8:06 pm, as the laborers worked to decontaminate the ring track and placed the decontamination rags into a RAM bag, one of the laborer's lanyards came undone, falling with the SRD and badge inside of the protective clothing to their knee. During this motion, the SRD experienced a dose rate alarm for approximately three seconds. The alarm, vibration, and SRD movement went unnoticed by the laborer. The alarm was not locked in long enough to register on the remote monitoring system. Around this same time is when the RAM bag became an HRA.

At approximately 8:14 pm, the laborer noticed the SRD was vibrating against his leg. He informed the other laborer and informed RPT A that he believed his SRD was alarming. RPT A escorted the laborers to the step-off pad and contacted the RPTs at the remote

monitoring station to check if a dose rate alarm occurred. No locked in alarms were noted, so it was relayed there was no alarm present. RPT A discovered the laborer's SRD had fallen and assumed the vibration was caused by the dropped SRD. The laborer's SRD and lanyard were relocated to the pocket of the inner set of his protective clothing and work was allowed to continue without validating that an alarm occurred by logging out the SRD or performing a survey of the work area to verify dose rates had not increased.

Work continued until about 8:50 p.m., when RPT C notified the laborers to exit based on the dose accrued and amount of decontamination work that remained to be done on the ring track. Upon exiting, the laborer who believed he had received an alarm, informed an RPT that was not involved in the work about the alarm he received. The licensee performed a follow-up survey that identified an unposted HRA with dose rates up to 1,600 millirem per hour on contact and 180 millirem per hour at 30 centimeters from the source, which happened to be the RAM bag where the laborers were disposing of the decontamination rags. The RAM bag was subsequently taped, labeled, and relocated to a posted HRA.

The inspectors reviewed the condition report, RWP, surveys, and investigation details associated with this event and determined that the failure to perform a survey to verify radiological conditions prior to allowing work to continue was a violation of 10 CFR 20.1501(a).

Corrective Actions: The licensee counseled the radiation protection technicians involved and developed a preferred process for decontamination of highly contaminated items for the refuel floor, wetwell, and undervessel to be used during the outage. Specific precautions were added to identify and monitor RAM bags containing cleaning rags and mop heads that can quickly become high radiation areas.

Corrective Action References: Action Request (AR) 00394579 and AR 00409248

Performance Assessment:

Performance Deficiency: Failure to perform a survey on the refuel floor to identify an unposted High Radiation Area and evaluate the magnitude and extent of radiation levels as required by 10 CFR 20.1501(a) was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the failure to perform a survey resulted in an unposted HRA where an uninformed worker was allowed to continue working with an SRD dose rate alarm setpoint that was not sufficiently low enough to allow the worker to take appropriate action before encountering dose rates exceeding 100 millirem per hour.

Significance: The inspectors assessed the significance of the finding using Appendix C, "Occupational Radiation Safety SDP." The finding was of very low safety significance (Green) because it was not an as low as reasonably achievable (ALARA) planning issue, there was no overexposure nor potential for an overexposure (due to availability of alarming dosimetry being worn), and the licensee's ability to assess dose was not compromised.

Cross-Cutting Aspect: H.14 - Conservative Bias: Individuals use decision making-practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop. Specifically, the licensee's decision making-practices that allowed work to continue without performing an

adequate radiation survey to verify the magnitude and extent of radiation dose rates had not increased is not reflective of an organization with a bias for conservative decision-making.

Enforcement:

Violation: 10 CFR 20.1003, defines a survey as an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation.

10 CFR 20.1501(a), requires in part, that each licensee make or cause to be made surveys of areas that may be necessary for the licensee to comply with the regulations in Part 20 and that surveys are reasonable under the circumstances to evaluate the magnitude and extent of radiation levels, concentrations or quantities of radioactive materials, and the potential radiological hazards that could be present.

As provided in paragraph 20.1601(c) of 10 CFR Part 20, the following controls shall be applied to high radiation areas in place of the controls required by paragraph 20.1601(a) and (b) of 10 CFR Part 20.

Technical Specification 5.7.1 requires, in part, that for High Radiation Areas with Dose Rates not Exceeding 1.0 rem/hour (at 30 centimeters from the radiation sources or from any surface penetrated by the radiation), each entryway to such an area shall be barricaded and conspicuously posted as a high radiation area, and entry into such areas shall be made only after dose rates in the area have been determined and entry personnel are knowledgeable of them.

Contrary to the above, on May 30, 2019, for High Radiation Areas with Dose Rates not Exceeding 1.0 rem/hour (at 30 centimeters from the radiation sources or from any surface penetrated by the radiation), the licensee failed to ensure that each entryway to such an area was barricaded and conspicuously posted as a high radiation area, and entry into such areas was made only after dose rates in the area have been determined and entry personnel are knowledgeable of them. Specifically, 1) the entryway to an HRA near a RAM bag containing the ring track decontamination rags on the refuel floor was not barricaded and conspicuously posted and 2) entry into the area near a RAM bag containing the ring track decontamination bags on the refuel floor was made before dose rates in the area had been determined and without entry personnel being made knowledgeable of them.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Failure to Follow ALARA Planning Procedures Resulting in Unplanned Dose on a Work Activity

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Occupational Radiation Safety	Green NCV 05000397/202003-02 Open/Closed	[H.5] - Work Management	71124.02

The inspectors reviewed a self-revealed, Green, non-cited violation Technical Specification (TS) 5.4.1 because the licensee failed to follow their as low is reasonably achievable (ALARA) planning procedures resulting in unplanned dose while performing the control rod drive mechanism (CRDM) Replacement work. Specifically, the licensee's procedure

instructed them to obtain data on the actual radiological conditions in the work area prior to commencement of the job and determine the effective dose rate using corrected historical data for the current scope and radiological conditions in the radiation work permit (RWP) planning phase. The licensee initially planned the job for approximately 6.850 person-Rem, including under vessel work, whereas the actual dose accrued to complete the work activity was 10.752 person-Rem.

Description: From May to June 2019 during Refueling Outage 24, numerous jobs led to exceeding their overall dose estimate of 139.896 person-Rem, and goal of 130 person-Rem, with an actual dose accrued of 161.474 person-Rem. One of the primary work activities that led to this dose exceedance was the CRDM Replacement job to exchange a total of 20 CRDMs from under vessel. This job commenced on May 19, 2019. The licensee identified they were having issues maintaining doses ALARA and in alignment with their planned dose estimate. In AR 00395843, the licensee documented that some of the primary issues resulting in additional unplanned dose were problems with their O-rings leaking and not properly seating, issues with their use of the special equipment used to more effectively manipulate the CRDM removals, rework on some equipment, and perhaps most significantly, elevated dose rates in the work areas. Survey M-20190514-5, "DW 501 Under-Vessel Post H2O Fill-Up," dated May 14, 2019, and characterized as a verification of dose rates survey, identified the maximum dose rates in the work area as 910 millirem per hour on contact and 320 millirem per hour at 30 cm. The Refueling Outage 24 (R24) Nightshift Logs, dated May 15, 2019, stated that "HP Planning has indicated that U/V (under vessel) dose rates in Drywell are 75% higher than R23 (Refueling Outage 23)." In addition, the licensee noted that the average dose rates for the CRDMs went from approximately 25 Rem/hour in R23 to approximately 47 Rem/hour during R24. The licensee noted that the primary reason for the elevated dose rates were attributed to the iron excursion event experienced in August 2017, and residually caused issues with the O-rings and overall dose increases. To their credit, the licensee did attempt numerous measures of dose reduction initiatives, but they were not effective enough to reduce the dose to a planned level of exposure. In response to a request for information, the licensee stated the following, "The work had been planned and it was decided to follow the contingency plan rather than revise the estimate." This process did not follow the instructions provided in their ALARA planning procedures.

Procedure PPM 11.2.2.14, "Radiological Planning and Reviews," Revision 4, Section 4.1.10, stated, in part, the following:

- Obtain data on the actual or anticipated radiological conditions in the work area using one of more of the following methods:
 - Pre-job surveys
 - Recent surveys of the work area
 - Historical surveys. Radiological conditions in the work area should be verified prior to allowing work to commence.
 - Data from job history files for similar tasks. Radiological conditions shall be determined prior to allowing work to commence.

Section 4.1.11 of PPM 11.2.2.14 stated, in part, the following:

- Based on the following, DETERMINE AND ENTER an effective dose rate for each craft on the H213 Panel (of the Passport Computer Program), after considering the following:
 - Current and historical radiological conditions in the work area
 - Estimated locations and body positions of the workers during the task

- Review of historical dose information corrected for current scope and conditions
- Information obtained in Step 4.1.10

PPM 11.2.2.14, Section 6.1, defined *Effective Dose Rate* as “An estimated dose rate based on the actual work area dose rates, worker position, worker movement with the work area, and planned dose reduction measures.” It also stated the historical information *may* be used to determine the Effective Dose Rate, but these conditions were explained further in Section 4.1.10 and 4.1.11, as stated above.

The inspectors determined that the licensee failed to implement the steps in Section 4.1.11 during their planning and implementation process for the CRDM Replacement job, which included various radiological work permits. Specifically, the licensee determined that the current radiological conditions were much higher than the historical radiological data from R23, but the licensee did not use the current higher radiological conditions in the work area to properly determine an effective dose rate, which is used to determine or revise the dose estimate, for the craft on the job prior to commencement of the work. Instead, the licensee stated they “decided to follow the contingency plan rather than revise the estimate.”

Section 3.9 of PPM 11.2.2.14 stated, in part, that “instructions and contingency plans in work instructions, ALARA plans, and the RWP should be specific and clearly stated with limited use if ‘as directed by RP.’ The aim is to help workers focus on the job and respond appropriately to emergent or changing conditions.” Thus, the contingency plans are inferred for use during the work activity in progress, for emergent or changing conditions, and not for decisions made prior to the job commencing. The inspectors determined that the failure to follow these instructions and implement the current radiological conditions into the ALARA planning permit prior to commencement of the work resulted in not effectively managing the radiological risk due to the short time span of the job and continuing with work in the midst of elevated radiological conditions. This ultimately resulted in unplanned dose to the workers for the CRDM Replacement job and under vessel work.

The NRC reviewed the dose estimate of 6.850 person-Rem for the job, as commenced, and credited an additional 0.251 person-Rem for credible emergent work, resulting in an NRC revised dose estimate of 7.101 person-Rem. This NRC revised dose estimate exceeds the approved revised dose estimate by the licensee, via their in-progress review, of 7.036-person-Rem for the CRDM work. Thus, the actual dose accrued of 10.752-person Rem exceeded the NRC revised dose estimate by 51.4 percent (51.4%).

Corrective Actions: The licensee documented the issues associated with the CRDM replacement job in their corrective action program as AR 00395843. The licensee also evaluated the performance of this job in their Refueling Outage 24 post job review package. Additionally, the licensee initiated AR 00409249 to address the proposed violation and assess any additional corrective actions relative to the performance deficiency.

Corrective Action References: AR 00395843 and AR 00409249

Performance Assessment:

Performance Deficiency: The licensee’s failure to follow their ALARA planning procedures and properly determine the effective dose rate prior to commencement of the CRDM Replacement job is a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Program & Process 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 during routine civilian nuclear reactor operation. Additionally, the finding was similar to Example 6(i) in Appendix E to Manual Chapter 0612, "Power Reactor Inspection Reports – Examples of Minor Issues."

Significance: The inspectors assessed the significance of the finding using Appendix C, "Occupational Radiation Safety SDP." The inspectors determined the finding had very low safety significance (Green) because, although the finding involved ALARA planning and work controls, the licensee's latest three-year rolling average collective dose was less than 240 person-Rem (i.e., 135.44 person-Rem).

Cross-Cutting Aspect: H.5 - Work Management: The organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The work process includes the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities. Specifically, the licensee failed to execute the work with the appropriate planning commensurate with the radiological risk identified, while coordinating and managing all relative under vessel work activities.

Enforcement:

Violation: Technical Specification 5.4.1, "Procedures," states, in part, that written procedures shall be established, implemented, and maintained covering the following activities: (a) the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Appendix A, Section 7(e), recommends Radiation Protection procedures.

Procedure PPM 11.2.2.14, Revision 4, Section 4.1.11, states, in part, that the licensee is to DETERMINE AND ENTER an effective dose rate for each craft on the H213 Panel (of the Passport Computer Program), based on the following:

- Current and historical radiological conditions in the work area
- Estimated locations and body positions of the workers during the task
- Review of historical dose information corrected for current scope and conditions
- Information obtained in Step 4.1.10 (obtain data on the actual or anticipated radiological conditions in the work area)

Contrary to the above, from May to June 2019 during Refueling Outage 24, the licensee failed to determine an effective dose rate for each craft based on information obtained in PPM, Step 4.1.10, and the historical data corrected for current scope and conditions. Specifically, the licensee performed a validation radiological survey five days prior to commencement of the CRDM Replacement job and determined that dose rates were significantly higher than the historical data but did not base the effective dose rate for the job on these current radiological conditions by appropriately revising the dose estimate and work scope. The licensee specifically stated in their response to the NRC that they, "decided to follow the contingency plan rather than revise the estimate," which does not align with the appropriate use of the contingencies, as stated in Section 3.9 of PPM 11.2.2.14, Revision 4. At the time, it appears as though the licensee believed they were operating within the scope of their procedures.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

On October 15, 2020, the inspectors presented the integrated inspection results to Mr. W.G. Hettel, Chief Nuclear Officer/Vice President Nuclear Generation, and other members of the licensee staff.

On July 27, 2020, the inspectors presented the Occupational Radiation Safety inspection results to Mr. R. Schuetz, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.04	Corrective Action Documents	Action Requests (ARs)	409261, 409457, 403099, 400090, 404607, 405359, 407757, 408822, 409196, 409593, 409594, 401237, 401287, 404112, 411017	
	Drawings	M512-1	Flow Diagram Diesel Oil & Miscellaneous Systems	048
		M512-3	Flow Diagram Diesel Oil & Miscellaneous Systems Diesel Generator Building	041
		M519	Flow Diagram: Reactor Core Isolation Cooling System	103
		M520	Flow Diagram HPCS and LPCS Systems	105
		M524-1	Flow Diagram Standby Service Water System	139
	Procedures	10.27.87	RCIC Keepfill Instruments RCIC-PIS-1 and RCIC-PIS-34 - CFT/CC	012
		3.1.6F	Instrument Rack Valve Line-Up Reactor Building 422' and 471' Elevations	007
		PPM 1.3.29	Locked Valve Checklist	086
		PPM 1.3.62	Use of Cable Ties (Tie Wraps)	007
		PPM 1.3.81	Maintaining Plant Component Status Control	016
		SOP-DG-DSA	Diesel Starting Air Operations	016
		SOP-DG1-LU	Emergency Diesel Generator (DIV 1) Valve and Power Supply Lineup	006
		SOP-DG2-LU	Emergency Diesel Generator (DIV 2) Valve and Power Supply Lineup	007
		SOP-DG2-START	Emergency Diesel Generator (DIV 2) Start	033
		SOP-DG2-STBY	Emergency Diesel Generator (DIV 2) Standby Lineup	023
		SOP-DG3-LU	High Pressure Core Spray Diesel Generator Valve and Power Supply Lineup	009
		SOP-DG3-STBY	High Pressure Core Spray Diesel Generator Standby Lineup	019
		SOP-HPCS-LU	HPCS Valve and Breaker Lineup	004
		SOP-HPCS-STBY	Placing HPCS in Standby Status	004
SOP-RCIC-LU	RCIC Valve and Breaker Lineup	004		
SOP-RCIC-STBY	Placing RCIC in Standby Status	012		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
		SOP-SW-LU	Standby Service Water System Valve & Breaker Lineup	013	
	Work Orders		02162153, 02126439, 02135644, 02155492, 02156217, 02160505, 02132544		
71111.05	Calculations	FP-02-85-03	Combustible Loading Calculation	010	
	Corrective Action Documents	Action Requests (ARs)	384793, 409481, 409497, 409505, 403382, 403385, 403450, 403610, 403748, 405319, 405384		
	Fire Plans	PFP-DG-BUILDING		Diesel Generator Building	004
		PFP-RB-422		Reactor 422	006
		PFP-RW-467		Radwaste 467	005
		PFP-RW-501-507		Radwaste 501-507	005
		PFP-TG-441-456		Turbine Generator 441-456	009
	Miscellaneous			Crew B Unannounced Backshift Drill 6/19/20	06/19/2020
				Drill Report: Unannounced Backshift Drill 6/19/20 Scenario OS-002 Crew B	06/19/2020
				Drill Report: Unannounced Backshift Drill 8/26/2020 Scenario TG-004 Crew E	08/26/2020
	Procedures	1.3.10C		Control of Combustibles	022
		1.3.57		Barrier Impairment	039
		13.1.1		Classifying the Emergency	049
		13.1.1A		Classifying the Emergency - Technical Bases	034
		4.FCP.1		FCP.1 Annunciator Panel Alarms	023
		4.FCP.2		FCP.2 Annunciator Panel Alarms	016
		ABN-FIRE		Fire	041
Work Orders			02163070		
71111.07A	Calculations	ME-02-92-231	Evaluation of Heat Exchanger Performance Data - DCW	001	
		ME-02-92-244	Minimum Heat Transfer Rate Required for DCW Heat Exchangers A & B	000	
		ME-02-92-245	RHR Heat Exchanger Tube Side Flowrate and Inlet Temperature Evaluation	000	
	Corrective Action Documents	Action Requests (ARs)	391148, 391160, 391175, 398502, 411270, 411411		
	Engineering			17432, 12442	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Changes			
	Miscellaneous	MOT-HX-1-1	Maintenance Optimization Template: Heat Exchangers	013
	Procedures	8.4.62	Thermal Performance Monitoring of DCW-HX-1B1 and DCW-HX-1B2	009
	Work Orders		02059477, 02059478, 02103773, 02103774, 02132409	
71111.11Q	Corrective Action Documents	Action Requests (ARs)	408746, 408747, 409496, 410023, 410112, 410534, 410833, 411186, 411193, 411194, 411197, 410801	
	Miscellaneous		AOM-T Roll-up Comments: Cycle 20-04	000
			Crew E 4.0 Critique Summary LR002492	07/27/2020
			Reactivity Control Plan September 26, 2020, Sequence Exchange and Scram Time Testing	09/15/2020
			Control Rod Withdrawal Deviation Sheet	09/03/2020
		LR002492	Cycle 20-4 Evaluated Scenario	000
	Procedures	13.1.1	Classifying the Emergency	049
		13.1.1A	Classifying the Emergency - Technical Bases	034
		3.2.6	Power Maneuvering	015
		3.3.1	Reactor Scram	066
		5.1.1	RPV Control	022
		5.1.2	RPV Control - ATWS	026
		ABN-FWH-HILEVEL/TRIP	Feedwater Heater High Level Trip	007
		ABN-POWER	Unplanned Reactor Power Change	016
		ABN-ROD	Control Rod Faults	031
		OI-09	Operations Standards and Expectation	079
		SOP-CR-MOVEMENT	Control Rod Movement	004
		SOP-RRC-FLOW-QC	Reactor Power Change with RRC Flow Controllers - Quick Card	005
		TSP-CRD-C101	CRD Scram Timing with Auto Scram Timer System	029
	Work Orders		02146065, 02159885	
71111.12	Corrective Action Documents	Action Requests (ARs)	408595, 409141, 409156, 409175, 409181, 409215, 409224, 409252, 409260, 409261, 409303, 409313, 408822, 406409, 407757, 409196, 332149, 336395, 410488, 410779, 410800,	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			410835, 410865, 410882, 410883, 410913, 410831, 410880, 410981, 411002, 411017, 411019, 411024, 411044, 411050, 411052	
	Miscellaneous		Instrument Master Data Sheet: RCIC-PS-9B	007
		BIP 19-0389	Barrier Impairment Permit for ISP-HPCS-X302 (Calibrate HPCS-FIS-6)	07/29/2020
		BIP 20-0344	Barrier Impairment Permit for Inspection of HPCS-FT-5 Penetration Seal	07/27/2020
		ISP 20-0136	Ignition Source Permit for Work Order 02140140	09/17/2020
	Procedures	1.3.57	Barrier Impairment	039
		1.5.11	Maintenance Rule Program	016
		10.16.1	Standby Service Water Pump Overhaul	017
		10.2.10	Fastener Torque and Tensioning	028
		10.25.4	Lubrication and Inspection of Limitorque MOVs	029
		10.27.85	RCIC Turbine Trip on High Turbine Exhaust Pressure "B" Calibration	002
		ISP-HPCS-X302	HPCS Flow Rate Low Minimum Flow - CC	009
		OSP-ELEC-M703	HPCS Diesel Generator Monthly Operability Test	069
		OSP-HPCS/IST-Q701	HPCS System Operability Test	059
		OSP-SW-M103	HPCS Service Water Valve Position Verification	026
		SOP-RCIC-FILL	RCIC Fill and Vent	020
		SOP-RCIC-OIL	RCIC Turbine or Pump Oil Fill and Prime	010
		SYS-4-22	Maintenance Rule Program	015
	Work Orders		02080473, 02126090, 02120692, 02128969, 02054567, 02089993, 02045665, 02123430, 02153118, 02131518, 02162153, 02156590, 02160239, 02135829, 02136041, 02152183, 02156156, 02156217, 02160285, 02160286, 02134251, 02134544, 02135557, 02140140, 02149943, 02152938, 02153201, 02158395, 02122134, 02139803, 02140165, 02143796, 02146121, 02146129, 02153512	
71111.13	Corrective Action Documents	Action Requests (ARs)	409466, 409497, 409505	
	Miscellaneous	FPF-2.4-28	Standpipe and Hose Systems, Evaluation of Long Hose	000

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Lengths Using a PROTEK #379 Nozzle	
		FPSI 20-0169	Fire Protection System Impairment Permit for Inst. Rack E-IR-P027 Door R415	08/02/2020
		FPSI 20-0170	Fire Protection System Impairment Permit for Inst. Rack E-IR-P021 Door R316	08/02/2020
		FPSI 20-0171	Fire Protection System Impairment Permit for Inst. Rack E-IR-P009 Door R216	08/02/2020
		FPSI 20-0172	Fire Protection System Impairment Permit for SW B Pumphouse Door G201	08/02/2020
		FPSI 20-0173	Fire Protection System Impairment Permit for Door C408 Upper Corridor Outside CR	08/02/2020
		FPSI 20-0174	Fire Protection System Impairment Permit for Door C223 Vital Island General Area	08/02/2020
		FPSI 20-0175	Fire Protection System Impairment Permit for Emergency Chiller Room Door C502	08/02/2020
		FPSI 20-0176	Fire Protection System Impairment Permit for Comm. RM RM C503 Door C505	08/02/2020
		FPSI 20-0177	Fire Protection System Impairment Permit for Instrument Shop RM RM C510 Door C511	08/02/2020
		FPSI 20-0178	Fire Protection System Impairment Permit for Div 2 HVAC Room Door C508	08/02/2020
		FPSI 20-0179	Fire Protection System Impairment Permit for Remote Shutdown Room Door C240	08/02/2020
		FPSI 20-0180	Fire Protection System Impairment Permit for SM-8 Switchgear Room Door C242	08/02/2020
		FPSI 20-0181	Fire Protection System Impairment Permit for Div 2 RPS RM Door C222	08/02/2020
		FPSI 20-0182	Fire Protection System Impairment Permit for Div 2 Battery Charger RM C224 Door C238	08/02/2020
		FPSI 20-0183	Fire Protection System Impairment Permit for Div 2 Battery Room Doors C217 or C238	08/02/2020
		FPSI 20-0184	Fire Protection System Impairment Permit for Waste Tank Floor Area RM C106 Door C109	08/02/2020
		FPSI 20-0185	Fire Protection System Impairment Permit for South Valve	08/02/2020

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
			RM RM R405 Door R407		
		FPSI 20-0186	Fire Protection System Impairment Permit for MCC Div 2 South RM R410 Door R408	08/02/2020	
		FPSI 20-0187	Fire Protection System Impairment Permit for RCIC Room Door R5 RM R015	08/02/2020	
		FPSI 20-0188	Fire Protection System Impairment Permit for Div 2 MCC ROOM Room R612 Door R607	08/02/2020	
		FPSI 20-0189	Fire Protection System Impairment Permit for Inside Door R217	08/03/2020	
		FPSI 20-0190	Fire Protection System Impairment Permit for B RHR Pump Room Doors R7/7A Room R006	08/03/2020	
		FPSI 20-0191	Fire Protection System Impairment Permit for DFO Day Tank RM Door D103 RM D111	08/02/2020	
		FPSI 20-0192	Fire Protection System Impairment Permit for DG 3 Div 2 DFO TK Door D110 Room D102	08/03/2020	
		FPSI 20-0193	Fire Protection System Impairment Permit for DG2 Diesel Room Door D104 RM D110	08/02/2020	
	Procedures	1.3.10	Plant Fire Protection Program Implementation	034	
		1.3.76	Integrated Risk Management	060	
		1.3.83	Protected Equipment Program	031, 032	
		1.3.85	On-line Fire Risk Management	006	
		ESP-B12-M101	Monthly Battery Testing 125VDC E-B1-2	007	
		ESP-BAT-W101	Weekly Battery Testing	016	
		OSP-ELEC-W101	Offsite Station Power Alignment Check	032	
	Work Orders		02156332, 02156554, 02163069, 02168650		
	71111.15	Calculations	E/I-02-87-07	Calculation for Load Flow Voltage for Main Buses in AC Distribution Systems	012
			E/I-02-90-01	Low Voltage System Loading, Security System Loading and Voltage Calculation	016
ME-02-92-43			Flow Reduction Factors Reactor Building	013	
ME-02-95-25			Evaluation of Standby Service Water Capability	002	
Corrective Action Documents		Action Requests (ARs)	407977, 407978, 408057, 315816, 408422, 408487, 408559, 408560, 408543, 408697, 409219, 408616, 408618, 408620, 408622, 408724, 408741, 407092, 409590, 409591, 409833,		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
			409851, 409937, 410056, 410399, 408029		
	Drawings	E504-1	Vital One Line Diagram	006	
		EWD-22E-039A	Electrical Wiring Diagram Primary Containment Atmospheric Control System CVB-V-1ST Front Disk	003	
		EWD-22E-048A	Electrical Wiring Diagram Primary Containment Atmospheric Control System CVB-V-1ST Rear Disk	003	
		M543-1	Flow Diagram - Reactor Bldg. Primary Containment Cooling and Purging Systems	092	
	Engineering Changes	8818	Critical Instrument Bus and Alternate Source Power	11/28/2011	
	Miscellaneous		Position Paper for Operator Convenience	07/10/2020	
			Operations and Maintenance Manual 399.5.1, York Centrifugal Turbopak R-11	09/22/2004	
			Technical position paper associated with AR 408029	07/14/2020	
			NRC Inspection Reports 05000327/2020010 and 05000328/2020010		
			Operations Log: July 1 - August 6, 2020	08/06/2020	
			Operator Logs: July 10 - 11, 2020	07/11/2020	
			213-05,7	Vacuum Relief Valve and Auxiliaries Owner's Manual	005
			MOT-CKV-1-1	Check Valves Maintenance Optimization Template	017
	Procedures	1.10.11	Technical Assessments Supporting Reportability and Reportability Evaluations	002	
		1.16.6B	Voluntary Entry into Technical Specification Action Statements, Licensee Controlled Specifications Requirements for Operability	018	
		1.3.16	Issue Management	002	
		1.3.66	Operability Determination	034, 035	
		1.3.9	Temporary Modifications	056	
		10.25.85	Repair of Wet Well Vacuum Breaker Position Switches	012	
		4.800.C1	800.C1 Annunciator Panel Alarms	031	
		ABN-ELEC-INV	120 VAC Critical Distribution System Failures	017	
		OSP-CVB/IST-M701	Vacuum Breaker Operability	016, 017, 018	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		OSP-ELEC-W102	Electrical Distribution Subsystem Breaker Alignment and Power Availability Verification	031
		SOP-CN-CONT-VENT	Containment Vent, Deinert, Purge, and Ventilating	027
		SOP-CN-OPS	Containment Nitrogen System Operations	010
		SOP-ELEC-IN3-OPS	IN3 Operations	013
		SWP-OPX-01	Operating Experience Program	001
	Work Orders		02155686, 02164937, 02156935, 29155613, 02131744, 02145562, 02042666, 02043384, 02156764, 02157084, 02157376, 02157626, 02167660, 29156112, 29156133	
71111.19	Corrective Action Documents	Action Requests (ARs)	408595, 409141, 409156, 409175, 409181, 409215, 409224, 409252, 409260, 409261, 409303, 409313, 407977, 407978, 408057, 408466, 408525, 408604, 408639, 408654, 408708, 408761, 408842, 408890, 408947, 408976, 409068, 409107, 409697, 409726, 409842, 409899, 403782, 404272, 404607, 406649, 354988, 355024, 342466, 400409, 410882, 410927, 410928, 410929, 410930, 410931, 410934, 410947, 410949, 410951, 410964, 410965, 410966, 411107	
	Miscellaneous		Operations Department Narrative Logs for 08/05/2020	
		BIP 19-0389	Barrier Impairment Permit for ISP-HPCS-X302 (Calibrate HPCS-FIS-6)	07/29/2020
		BIP 20-0344	Barrier Impairment Permit for Inspection of HPCS-FT-5 Penetration Seal	07/27/2020
	Procedures	1.3.57	Barrier Impairment	039
		10.2.13	Approved Lubricants	077
		ABN-HVAC	HVAC Trouble	017
		ISP-HPCS-X302	HPCS Flow Rate Low Minimum Flow - CC	009
		OSP-CCH/IST-M702	Control Room Emergency Chiller System B Operability	045
		OSP-CONT-C101	Suppression Pool Average Water Temperature Surveillance	002
		OSP-ELEC-M701	Diesel Generator 1 -Monthly Operability Test	060
		OSP-ELEC-M703	HPCS Diesel Generator Monthly Operability Test	069
	OSP-HPCS/IST-	HPCS System Operability Test	059	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Q701		
		OSP-RCIC-M101	RCIC Fill, Flow Controllers, and Valve Lineup Verification	019
		OSP-RCIC/IST-Q701	RCIC Operability Test	063
		OSP-RCIC/IST-Q702	RCIC Valve Operability Test	044
		OSP-SW-IST-Q702	Standby Service Water Loop B Operability	035
		OSP-SW-M102	Standby Service Water Loop B Valve Position Verification	043
		OSP-SW-M103	HPCS Service Water Valve Position Verification	026
		PPM 1.5.1	Surveillance Testing Program	043
		SOP-HVAC/CR-SHUTDOWN	Control, Cable, and Critical Switchgear Rooms HVAC Shutdown	005
		SOP-HVAC/CR-START	Control, Cable, and Critical Switchgear Rooms HVAC Start	017
		SOP-RHR-SPC	Suppression Pool Cooling/Spray/Discharge/Mixing	008
		SOP-SW-SHUTDOWN	Standby Service Water System Shutdown	002
		SOP-SW-START	Standby Service Water System Start	008
		SOP-SW-STBY	Placing Standby Service Water in Standby Status	003
		SWP-TST-01	Post Maintenance Testing Program	017
	Work Orders		02080473, 02126090, 02120692, 02128969, 02054567, 02089993, 02045665, 02123430, 02153118, 02131518, 02162153, 02156590, 02160239, 02164274, 02138105, 02124750, 02154772, 02159891, 02915593, 02124750, 02157518, 02167155, 02150225, 02156936, 02160285, 02161982, 02134544, 02134781, 02135563, 02140140, 02147071, 02158410, 02140165, 02153512	
71111.22	Calculations	E/I-02-91-03	Calculation for Division 1 and 2 and 3 Diesel Generator Loading	021
	Corrective Action Documents	Action Requests (ARs)	291562, 382935, 410110, 410392, 410513, 410610, 410611, 410618, 410724, 410735, 410803, 410823, 409695, 409856, 409857, 409866, 411040, 411419	
	Drawings	204-00,88,1	Condensate Storage Tank 1A General Plan Detail and Parts	007

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
			List		
		204-00,89,1	Condensate Storage Tank 1B General Plan Detail and Parts List	007	
	Engineering Changes		17708		
	Miscellaneous			Condensate Storage Tanks A & B Inspection Videos	09/24/2020
				Operations Department Narrative Logs for 08/10/2020	
	Procedures	10.25.48		Testing Molded Case Circuit Breakers	017
		FLEX-01		FLEX Program	003
		OSP-FLEX-Q704		Diesel Generator 4 Quarterly Surveillance	000
		OSP-SGT/IST-Q701		SGT Valve Operability (System A)	010
		PPM 1.5.1		Surveillance Testing Program	043
		PPM 13.10.1		Control Room Operations and Shift Manager Duties	035
		SWP-IST-01		ASME Inservice Testing	004
	Work Orders			02160246, 02140807, 02140808, 02145984, 02168133	
71114.06	Corrective Action Documents	Action Requests (ARs)	410143, 410180, 410323		
	Procedures	13.1.1	Classifying the Emergency	049	
		13.1.1A	Classifying the Emergency - Technical Bases	034	
		13.10.2	TSC Manager Duties	035	
		13.10.6	Plant / NRC Liaison Duties	025	
	13.10.9	Operations Support Center Manager and Staff Duties	050		
71124.01	Corrective Action Documents	Action Request (AR)	00320829, 00394339, 00394466, 00394579, 00395232, 00401615, 00403475, 00404828, 00405114, 00405278, 00409019, 00409248		
	Procedures	4.840.A3	840.A3 Annunciator Panel Alarms	020	
		HPI-0.19	Radiation Protection Standards and Expectations	019	
		HPI-12.96	RCA Access Restriction and Reinstatement	009	
		PPM 11.2.13.1	Radiation and Contamination Surveys	043	
		PPM 11.2.6.7	Special Dosimetry	019	
	Radiation Surveys	M-20190517-34	RB 606 SFP Inventory Following R24 Fuel Inspections	05/17/2019	
M-20190523-28		RB 606 SFP Inventory Following LPRM And Dry Tube	05/23/2019		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
			Replacement		
		M-20190530-20	RB 606 Removal Of Framatome Hawkeye Ring From Cavity	05/30/2019	
		M-20190531-4	RB 606 Hawkeye ring post decon/dose rate alarm followup	05/30/2019	
			M-20191024-7	RB 572 Monthly	10/24/2019
	Radiation Work Permits (RWPs)	30004256	R24 RF Wetwork, Invessel, SFP, DSP *HR* and Associated Tasks, Pre-Job Briefing, ALARA Plan	001	
	Self-Assessments	388465-02	10 CFR 20 Annual Program Review Snapshot Self-Assessment Report	03/15/2019	
		401808-01	NRC Inspection Procedure 71124.01 Snapshot Self-Assessment Report	03/05/2020	
	Work Orders	02109577-01	Calibrate/Repair Outage HP Portable Air Samplers	03/26/2019	
		02137805-01	Calibrate/Repair HP Portable Air Samplers	04/19/2019	
71124.02	Corrective Action Documents	Action Request (AR)	00371557; 00373396; 00374279; 00389652; 00393863; 00393987; 00394579; 00395197; 00395232; 00395371; 00395843; 00396076; 00398464; 00401910; 00404386; 00405192; 00405201; 00409249		
	Miscellaneous		2019 CGS Refueling Outage 24 CRE Report	2019	
			2017 CGS Refueling Outage 23 CRE Report	2017	
			EDEX Assessments for RWPs 30004258, 30004447, 30004470		
	Procedures	GEN-RPP-01	ALARA Program Description	009	
		GEN-RPP-02	Radiological Planning and Control Process	034	
		GEN-RPP-13	Senior Site ALARA Committee	013	
		PPM 11.2.2.11	Exposure Evaluations for Maintaining TEDE ALARA	009	
		PPM 11.2.2.14	Radiological Planning and Reviews	004	
		PPM 11.2.2.7	ALARA Procedure Analysis	012	
		PPM 11.2.2.8	ALARA Engineering Analysis	007	
		PPM 11.2.8.2	Radiation Work Permit Preparation and Use	002	
	Radiation Work Permits (RWPs)	30004256	R24 Refuel Floor Wetwork Invessel, Spent Fuel Pool, and DSP - High Risk	001	
		30004258	R24 Wetwork/Reactor Dive Inspection (Divers) - LHRA/High Risk	000	
		30004318	R24 CRDM Undervessel Remove and Replace - LHRA/High	000	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Risk	
		30004319	R24 CRDM Undervessel Support - LHRA	001
		30004328	R24 ST/VR/DCA/Rebuild Room Miscellaneous Work - High Risk	000
		30004336	R24 Drywell/Steam Tunnel Shielding Install/REM and Support Tasks - LHRA	000
		30004340	R24 DW/ST/VR OPS HC/LC, LLRT and Valve Lineups - LHRA	001
		30004347	R24 Drywell MSRV Maintenance - LHRA	000
		30004350	R24 Steam Tunnel MSIV Maintenance and Refurb Tasks - HRA	002
	Self-Assessments	00388465-02	Annual Review of the Columbia Generating Station Radiation Protection Program that Fulfills the Requirements of 10 CFR 20.1101(c) for CY2018	03/15/2019
		401806	Pre-Inspection (71124.02) ALARA Snapshot Self-Assessment	02/28/2020
		402838	Annual Review of the Columbia Generating Station Radiation Protection Program to Meet 10 CFR 20.1101(c) Requirements	03/25/2020
71124.03	Corrective Action Documents	Action Request (AR)	00386503, 00387127, 00387272, 00387564, 00388740, 00390148, 00400231, 00401759, 00403834, 00404159, 00404572, 00404573, 00404716, 00404977, 00405381, 00405882	
	Drawings	SD000195	Radwaste Building HVAC	011
		SD000201	Control Room, Cable Room, and Critical Switchgear Rooms - HVAC	016
	Miscellaneous		CAM Locations and Potential Sources	
			Breathing Air Sample Analysis - SCBA Compressor	03/18/2020
		Personal Qualification Data (PQD)	Self-Contained Breathing Apparatus qualified personal with qualification dates	03/17/2020
	Procedures	GEN-RPP-05	Respiratory Protection Program Description	015
		GEN-RPP-10	Use of Respiratory Equipment	012
		HPI-15.1	Inspection and Storage of Respirators and Attachments	012

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		HPI-15.5	Set-up and Use of Bullard Air Line Filters	003
		HPI-8.2	Quantitative Respirator Fit Testing Using the PortaCount System	029
		PPM 11.2.11.3	Issuance of Respiratory Equipment	017
		PPM 11.2.15.11	Use and Certification of Portable Air Handling Units	015
		PPM 12.5.36	Service Air Sampling	005
	Self-Assessments	378162	Respiratory Protection Program Self -Assessment	03/12/2020
		402740	71124.03 SnapShot Self-Assessment	
	Work Orders	0211048501	Sample Plant Breathing Air	01/30/2019
		0211048601	Sample Plant Breathing Air	04/25/2019
		SCBA Inspections	02142336, 02147151, 0215236, 02133230	
71124.04	Corrective Action Documents	Action Request (AR)	00339377; 00374271; 00382896; 00393990; 00393998; 00394156; 00394272; 00395067; 00395101; 00397889	
	Miscellaneous		Summary of Internal Exposure (5/21/2018 to Present)	06/22/2020
			Columbia Generating Station Scaling Factors	03/12/2018
			Columbia Generating Station Scaling Factor	03/12/2018
			Columbia Generating Station CRE/Source Term Reduction 5-Year Plan	2020
		100518-0	NVLAP Ionizing Radiation Dosimetry Accreditation	01/01/2020
		NRC Form 5	Declared Pregnant Workers Annual Dose Forms	2018-2019
	Procedures	11.2.13.8	Airborne Radioactivity Surveys	019
		11.2.15.13	Control of Personnel Skin and Clothing Contamination	004
		11.2.4.5	Whole Body Counts and Daily Checks Using the Renaissance FASTSCAN	016
		11.2.4.6	In Vitro Bioassay Sampling and Analysis	003
		GEN-RPP-06	Dosimetry Program Description	013
		HPI-0.19	Radiation Protection Standards and Expectations	019
		HPI-5.9	Evaluation of In-Vivo Bioassay Results Following a Potential Intake	014
		SWP-RPP-01	Radiation Protection Program	016
	Radiation Work Permits (RWPs)	30004447	2018 Reactor 606 Badger Testing	000
		30004470	2019 Reactor 522 and Reactor 548 RWCU Flow - LHRA/High Risk	000

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Self-Assessments	00401801	Pre-Inspection Self-Assessment of the Columbia Generating Station Internal and External Dosimetry Programs	04/09/2020
71151	Miscellaneous		MSPI Cooling Water System Derivation Reports	09/02/2020
			MSPI Emergency AC Power System Derivation Reports	09/02/2020
			MSPI Heat Removal System Derivation Report	09/02/2020
			MSPI High Pressure Injection System Derivation Reports	09/02/2020
			MSPI Residual Heat Removal System Derivation Reports	09/02/2020
		Control Room Operator Logs for 7/1/2019 to 6/30/2020		
	Procedures	HPI-0.14	Assessing and Reporting NRC Occupational Exposure Control Effectiveness Performance Indicator Data	006
Self-Assessments	387312	RETS/ODCM PI Verification Snapshot Self-Assessment Report	05/11/2019	
	401807	Occupational Exposure Control Performance Indicator Snapshot Self-Assessment Report	02/11/2020	
71153	Corrective Action Documents	Action Requests (ARs)	408616, 408618, 408620, 408622, 408724, 408741, 404829, 410817	
	Drawings	E504-1	Vital One Line Diagram	006
	Engineering Changes	8818	Critical Instrument Bus and Alternate Source Power	11/28/2011
	Miscellaneous		Operator Logs: July 10 - 11, 2020	07/11/2020
			Position Paper for Operator Convenience	07/10/2020
	Procedures	1.3.16	Issue Management	002
		4.800.C1	800.C1 Annunciator Panel Alarms	031
		ABN-ELEC-INV	120 VAC Critical Distribution System Failures	017
		ABN-FWH-HILEVEL/TRIP	Feedwater Heater High Level Trip	007
		ABN-POWER	Unplanned Reactor Power Change	016
		SOP-ELEC-IN3-OPS	IN3 Operations	013
Work Orders		02131744, 02169264, 02169265		