UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

January 29, 2021

Mr. B. Joel Burch
Vice President and General Manager
BWXT Nuclear Operations Group, Inc.
P.O. Box 785
Lynchburg, VA 24505-0785

SUBJECT: BWXT NUCLEAR OPERATIONS GROUP – NUCLEAR REGULATORY COMMISSION INTEGRATED INSPECTION REPORT 70-27/2020-004 AND NOTICE OF VIOLATION

Dear Mr. Burch:

This letter refers to the inspections conducted from October 1 through December 31, 2020, at the BWXT Nuclear Operations Group, Inc. (NOG) facility in Lynchburg, VA. During that period, the U. S. Nuclear Regulatory Commission (NRC) completed routine, on-site inspections as permitted by conditions at that time involving the novel coronavirus disease (COVID-19).

The enclosed report presents the results of the inspections, which were conducted through a combination of remote reviews and onsite observations. The inspectors reviewed activities as they relate to public health and safety, the common defense and security, and compliance with the Commission's rules and regulations, as well as the conditions of your license. The inspections covered the areas of safety operations, radiological controls, facility support, and other areas. Within these areas, the inspectors reviewed procedures and representative records remotely and conducted telephonic interviews with site personnel. In some instances, regional inspectors were able to conduct routine inspections onsite as originally planned. The resident inspector also visited the facility one or more times per week to monitor plant conditions and conduct focused inspection activities. The findings were discussed with you and members of your staff at exit meetings held on October 22, November 19, 2020, and January 28, 2021.

Based on the results of this inspection, the NRC has determined that a violation of NRC requirements occurred. This violation was evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at https://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html. The violation is cited in the enclosed Notice of Violation (Notice), and the circumstances surrounding the violation are described in detail in the subject inspection report. The violation is being cited in the Notice because the NRC identified the violation. The NRC has concluded that information regarding: (1) the reason for the violation(s); (2) the corrective actions that have been taken and the results achieved; and (3) the date when full compliance was achieved is already adequately addressed in the enclosed NRC Inspection Report 70-27/2020-004. Therefore, you are not required to respond to this letter unless the description herein does not accurately reflect your corrective actions or your position. In that case, or if you chose to provide additional information, you should follow the instructions specified in the enclosed Notice.

Additionally, the inspectors implemented measures during the inspection period to support the determination of reasonable assurance that the public and the environment will be adequately protected from the hazards related to the operation of your facility. These compensatory measures included activities such as supplemental reviews of licensee-submitted reports (e.g., effluent reports, plant modification reports, and changes to the integrated safety analysis summary), and increased communications with your staff to discuss the status of plant operations. The compensatory measures did not constitute direct inspection and were intended to address the impact of the COVID-19 public health emergency on the agency's routine oversight program, particularly on the continuous engagement with your facility via periodic site visits and in-person interactions. These proactive actions were taken to obtain additional insights into the safe operation of the facility during the COVID-19 public health emergency.

The NRC will continue evaluating the guidelines and recommendations from Federal and State authorities, along with the conditions of your facility, to determine how to best conduct inspections until normality can be achieved. In the interim, the NRC plans to conduct periodic resident inspector visits to the site and gradually increase their presence, as appropriate. The NRC will also maintain compensatory measures and frequent communications with your staff to discuss regulatory compliance matters and gather information to inform the decisions about future inspections.

In accordance with Title 10 of the *Code of Federal Regulations* Section 2.390 of the NRC's "Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

If you have any questions concerning these inspections, please contact Noel Pitoniak of my staff at 404-997-4634.

Sincerely,

/RA/

Eric Michel, Chief
Projects Branch 2
Division of Fuel Facility Inspection

Docket No. 70-27
License No. SNM-42

Enclosure:
NRC Inspection Report 70-27/2020-004
w/Attachment: Supplementary Information

cc: Distribution via LISTSERV®

SUBJECT: BWXT NUCLEAR OPERATIONS GROUP – NUCLEAR REGULATORY COMMISSION INTEGRATED INSPECTION REPORT 70-27/2020-004 dated January 29, 2021

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NOTICE OF VIOLATION

BWXT Nuclear Operations Group, Inc.
Lynchburg, Virginia

Docket No. 70-27
License No. SNM-42

During NRC inspections conducted from October 1, 2020, to December 31, 2020, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is described below:

License Condition S-1 states, in part, that the license is for "use in accordance with the statements, representations and conditions in Chapters 1 through 11 of the application." Section 11.2.2, "Corrective Maintenance," of license application Chapter 11, "Management Measures," stated, in part, that "At completion of any corrective maintenance, functional tests, as necessary, shall be conducted to assure the proper function of the IROFS. The functional tests determine that the IROFS is performing properly."

Contrary to the above, on October 21, 2020, the licensee failed to assure the proper function of an IROFS following the completion of corrective maintenance as required by Section 11.2.2 of the license application. Specifically, the licensee failed to perform a functional test following the completion of corrective maintenance on the programmable logic controller associated with the IROFS in-line monitors #1, #2, and #3 in the Uranium Recovery facility. This violation is being treated as a cited violation consistent with Section 2.3.2 of the Enforcement Policy because it was NRC identified.

This is a Severity Level IV violation.

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation, and the date when full compliance was achieved, is already adequately addressed on the attached inspection report 70-27/2020-004. However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you chose to respond, clearly mark your response as a "Reply to a Notice of Violation," and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C 20555-001 with a copy to the Regional Administrator, Region II, within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

If you choose to respond, your response will be made available electronically for public inspection in the NRC Public Document Room or in the NRC's Agencywide Documents Access and Management (ADAMS) accessible form the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. Therefore, to the extent possible, the response should not include any personal privacy, proprietary, classified, or safeguards information so that it can be made available to the Public without redaction.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days of receipt.

Dated this 29 day of January 2021

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

INSPECTION REPORT

Docket No:	70-27
License No:	SNM-42
Report No:	70-27/2020-004
Enterprise Identifier:	I-2020-004-0036
Licensee:	BWX Technologies, Inc. (BWXT)
Facility:	Nuclear Operations Group, Inc. (NOG)
Location:	Lynchburg, VA 24505
Inspection Dates:	October 1 through December 31, 2020
Inspectors:	A. Alen, Senior Resident Inspector B. Adkins, Fuel Facility Inspector (Sections A.5, C.4) L. Cooke, Fuel Facility Inspector (Section C.1) G. Goff, Fuel Facility Inspector (Sections B.2, B.3) N. Peterka, Fuel Facility Inspector (Sections B.3, B.4) T. Sippel, Fuel Facility Inspector (Sections A.5, C.4)
Approved By:	Eric Michel, Chief Projects Branch 2 Division of Fuel Facility Inspection

Enclosure

EXECUTIVE SUMMARY

BWXT Nuclear Operations Group, Inc.
NRC Integrated Inspection Report 70-27/2020-004
October 1 – December 31, 2020

Inspections were conducted by the senior resident inspector and regional inspectors during normal and off-normal hours in safety operations, radiological controls, facility support, and other areas. The inspectors performed a selective examination of licensee activities that were accomplished by direct observation of safety-significant activities and equipment, tours of the facility, interviews and discussions with licensee personnel, and a review of facility records.

Safety Operations

- No violations of more than minor significance were identified related to Plant Operations and Operational Safety walkdowns. (Sections A.1 and A.2)

- No violations of more than minor significance were identified related to the Fire Protection Program. (Section A.3)

- No violations of more than minor significance were identified related to the Nuclear Criticality Safety Program. (Sections A.4 and A.5)

Radiological Controls

- No violations of more than minor significance were identified related to the Radiation Protection Program. (Sections B.1 and B.2)

- No violations of more than minor significance were identified related to the Radioactive Waste Processing, Handling, Storage, and Transportation Program. (Section B.4)

- No violations of more than minor significance were identified related to the Effluent Control and Environmental Protection Program. (Section B.3)

Facility Support

- No violations of more than minor significance were identified related to the Plant Modifications Program. (Sections C.1 and C.3)

- No violations of more than minor significance were identified related to the Identification and Resolution of Problems. (Section C.2)

- One NRC identified Severity Level IV violation of NRC requirements was identified related to the Post-Maintenance Testing. (Section C.4)

- No violations of more than minor significance were identified related to Surveillance Testing. (Section C.5)

Other Areas

- No violations of more than minor significance were identified related to observations of security personnel and activities. (Section D.1)

- Violation 2018-006-03, Failure to Maintain Adequate Process Safety Information for Process Systems Associated with the UAl_x Glovebox Systems as Required by 10 CFR 70.62(b), was discussed and is closed. (Section D.2)

Attachment

Key Points of Contact
List of Items Opened, Closed, and Discussed
Inspection Procedures Used
Documents Reviewed

REPORT DETAILS

Summary of Plant Status

During the inspection period, routine fuel manufacturing operations and maintenance activities were conducted in the fuel processing areas, Uranium Recovery (UR) facility, and in the Research and Test Reactors (RTR) facility.

A. Safety Operations

1. Plant Operations (Inspection Procedures 88135 and 88135.02)

   a. Inspection Scope

   The inspectors performed weekly tours of plant operating areas housing special nuclear material (SNM) to verify that equipment and systems were operated safely and in compliance with the license application and Title 10 of the *Code of Federal Regulations* (10 CFR) 70, "Domestic Licensing of Special Nuclear Material." The inspectors conducted daily communications (remotely and onsite) with area managers and reviewed area operations log sheets, when onsite, throughout the period to gain insights into process safety and operational issues. The inspectors reviewed selected licensee identified issues and corrective actions for previously identified issues. These reviews focused on plant operations, safety-related equipment (valves, sensors, instrumentation, in-line monitors, and scales), and items relied on for safety (IROFS) to determine whether the licensee captured off-normal events and implemented effective corrective actions as required.

   The inspectors conducted weekly tours to verify that operators, front-line managers, maintenance mechanics, radiation protection staff, and process engineering personnel were knowledgeable of their duties and attentive to any alarms or annunciators at their respective stations as required. The tours included walkdowns of the RTR, filler, UR areas, and other manufacturing areas where SNM was being processed. The inspectors observed activities during normal and upset conditions to verify compliance with procedures and material station limits. The inspectors reviewed selected safety controls, including IROFS, to verify that they were in place, available, and functional to ensure proper control of SNM. The inspectors reviewed operator log sheets, operating procedures, maintenance records, and equipment and process changes to obtain information concerning operating trends and activities. The inspectors reviewed corrective actions to verify that the licensee actively pursued corrective actions for conditions requiring temporary modifications and compensatory measures. The inspectors also reviewed procedure changes (CHG-6045, CHG-6321, and CHG-7998) associated with specialty fuel facility (SFF) operating procedure OP-1007886, "Uranium Metal Dissolution Using Dissolver 2," Revision (Rev.) 16, to confirm that the procedure revision process was followed and the change did not conflict with regulatory or license requirements.

   The inspectors performed periodic tours of the outlying facility areas to verify that equipment and systems were operated safely and in compliance with the license application. The inspectors focused on potential wind-borne missile hazards, potential fire hazards with combustible material storage and fire loading, hazardous chemical storage, the physical condition of bulk chemical storage tanks and piping, storage of compressed gas containers, and potential degradation of plant security features.

In addition, the inspectors periodically toured or inspected the licensees' emergency

response facilities to verify that the facilities were maintained in a readily available status as required.

The inspectors attended (remotely via telephone or physically during weekly site visits) various meetings including the Change Review Board, Safety Committees (i.e., Safety Review Committee and ALARA), and met periodically with plant senior management and licensing personnel throughout the inspection period to determine the overall status of the plant. The inspectors evaluated the licensee's response to significant plant issues and their approach to solving various plant problems in accordance with Quality Work Instruction (QWI) 2.1.3, "Integrated Safety Analysis Methodology;" QWI 14.1.4, "Reporting Unusual Incidents;" and QWI 14.1.10, "Safety Evaluation of Unusual Incidents."

b. Conclusion

No violations of more than minor significance were identified.

2. Operational Safety (Inspection Procedure 88135.04)

a. Inspection Scope

The inspectors evaluated the operational safety of selected processes for the RTR uranium molybdenum (U-Mo) foil production (i.e., safety analysis report (SAR) 15.44) and the pack assembly (i.e., SAR 15.26) operating areas of the facility to verify the licensee operated the plant safely and in accordance with the license application and regulatory requirements of 10 CFR 70.61 and 10 CFR 70.62.

The inspectors focused their review on selected processes and associated safety systems and components (SSCs), including IROFS, for the following accident sequence nodes:

- SAR 15.44: UMOCC, UMOWS, UMOHR, and UMOPS
- SAR 15.26: CON2, CON4-CON9, CON11-CON14, and CON16

The inspectors verified the processes were being conducted as described in the integrated safety analysis (ISA) and that SSCs, including IROFS, were implemented and maintained in accordance with the applicable regulatory requirements and licensing basis of the facility. The inspectors reviewed management measures, such as procedures, training, and maintenance for IROFS in the selected processes (e.g., including workstations, transport carts, pumping station, etc.) to confirm they were available and reliable to perform their intended safety function(s).

The inspectors performed walkdowns of the selected processes to verify the availability, reliability, and capability of SSCs, including IROFS, to perform their safety functions were not affected by outstanding design issues, permanent and/or temporary modifications, operator workarounds, adverse conditions, or other system-related issues. The inspectors verified the physical presence of passive engineered safety controls, evaluated the safety controls to determine their capability and operability, and verified that potential accident scenarios identified in the ISA were covered.

The inspectors reviewed process operating procedures to verify that required actions (i.e., administrative IROFS) as identified in the ISA were correctly transcribed into written operating procedures. The inspectors evaluated the content of procedures with respect to operating limits and operator responses for upset conditions and verified that limits required to assure safety were adequately described in the procedures. The inspectors observed operators' performance to verify that they were adhering to applicable safety procedures and implementing the required safety controls. The inspectors reviewed the postings applicable to the tasks being observed and verified that the postings were current, reflected safety controls, and were followed by the operators. The inspectors reviewed training program documents for the selected processes and interviewed several operators to verify that their training was adequately implemented.

The inspectors reviewed selected corrective action program (CAP) entries to verify that deviations from procedures and unforeseen process changes affecting nuclear criticality, chemical, radiological, or fire safety were documented and investigated promptly. In addition, the inspectors evaluated the corrective actions associated with selected CAP entries to verify that the completed corrective actions were adequate.

b. Conclusion

No violations of more than minor significance were identified.

3. Fire Protection (Inspection Procedure 88135.05)

a. Inspection Scope

The inspectors reviewed the licensee's fire protection program to verify compliance with selected portions of 10 CFR 70, "Domestic Licensing of Special Nuclear Material;" License Application Chapter 7, "Fire Safety;" Chapter 11, "Management Measures;" and applicable procedures. Specific areas of the FP program reviewed are detailed below. Documents reviewed are listed in the Attachment.

Quarterly Inspection (Plant Area Walkdown)

The inspectors performed an inspection of main bays 11, 12, and 13 to verify compliance with license application Chapter 7, "Fire Safety," and the National Fire Protection Association (NFPA) 801, "Standard for Fire Protection for Facilities Handling Radioactive Materials," as required. The inspectors performed fire safety walkdowns and reviewed the fire detection and suppression capabilities in those areas, as applicable. The inspectors also reviewed relevant portions of the pre-fire plans before and during the walkdowns to verify that key firefighting features and information identified in the plans were in place in the field and that fire hazards that existed in the field were reflected in the pre-fire plans. The inspectors also verified that housekeeping in the areas reviewed was sufficient to minimize the risk of fire. The inspectors reviewed the type of manual firefighting equipment that was provided to verify that it was appropriate for the type of fire that could occur.

Weekly plant tours were conducted for other areas of the plant to verify that housekeeping in the areas was sufficient to minimize the risk of fire and that transient combustibles were being controlled and minimized as required.

Annual Inspection (Fire Brigade Drill/Readiness)

On October 17, 2020, the inspectors observed fire brigade training as part of the licensee's annual emergency team training program to verify compliance with the license and NFPA 600, "Standard on Industrial Fire Brigades." The inspectors specifically observed drill coordinators start a planned fire in the burn building, initiate the fire brigade response, use of forcible entry tools (e.g., halligan bar and flat-head axe), conduct of search and rescue operations, extinguish the fire, and conduct a performance critique afterwards. The inspectors observed fire brigade leader command and control, proper donning and use of turnout gear and self-contained breathing apparatus, availability of firefighting equipment, clear and effective radio communications, coordination of unnecessary personnel, investigation of the incident, and implementation of pre-planned strategies.

b. Conclusion

No violations of more than minor significance were identified.

4. Nuclear Criticality Safety (Inspection Procedure 88135.02)

a. Inspection Scope

The inspectors conducted weekly production area tours to verify various criticality controls including the implementation of criticality station limit cards and container sizing to minimize potential criticality hazards as required. The inspectors reviewed several nuclear criticality safety (NCS)-related IROFS to verify operability. The inspectors also observed operator performance to verify compliance with requirements associated with NCS-related IROFS.

As part of the weekly onsite visits, the inspectors reviewed CAP entries associated with criticality safety. The inspectors evaluated the licensee's response to such entries and, if needed, had discussions with NCS engineers to determine safety significance and to verify compliance with procedures.

b. Conclusion

No violations of more than minor significance were identified.

5. Nuclear Criticality Safety (Inspection Procedure 88015)

a. Inspection Scope

The inspectors evaluated selected aspects of the licensee's NCS program to verify compliance with selected portions of 10 CFR 70 including 70.24, 70.61(d), 70.62(d), Chapter 5, "Nuclear Criticality Safety," of the license application, and applicable licensee procedures. Documents reviewed are listed in Section 4 of the Attachment.

Criticality Analysis

The inspectors reviewed selected nuclear criticality safety evaluations (NCSEs) to verify that they were consistent with the commitments in the license application. These commitments included the double contingency principle, assurance of subcriticality under normal and credible abnormal conditions with the use of subcritical margin, and having properly reviewed and approved NCSEs in place prior to conducting new or changed operations. The inspectors reviewed the selected NCSEs to determine whether calculations were performed within their validated areas of applicability and consistent with the validation report. The NCSEs were selected based on factors such as how recently they were made or revised and their operating history.

The inspectors reviewed the licensee's generation of accident sequences to determine whether the NCSEs systematically identified normal and credible abnormal conditions in accordance with the commitments and methodologies in the license application for the analysis of process upsets. The inspectors also reviewed the protection and prevention scores assigned in the accident sequences to determine whether they were assigned consistent with Section 3.2.4, "Definition of Unlikely, Highly Unlikely, and Credible," of the license application and resulted in the scenario being highly unlikely.

The inspectors reviewed the latest validation report (NCS-TR-00007, "Validation Report for SCALE 6.1," Rev. 4) to verify consistency with the technical practices and methodologies specified in Section 5.2.1, "Computer Codes," of the license application. The validation report change included the incorporation of new benchmark experiments into those used to establish the calculational margin used to ensure that all nuclear processes are subcritical, including use of an approved margin of subcriticality for safety. The inspectors also reviewed NCS-TR-00029, "Criticality Experiments Report for IEU-COMP-THERM-016: Single Cores of 30.14% ^{235}U Enriched UO_2/Was Mixtures – with Composite Reflectors," Rev. 0, which describes a set of benchmark experiments that were included in the latest validation report.

Criticality Implementation

The inspectors performed walkdowns in the higher tier vertical dry operations, RTRT, and UR controlled areas to determine whether existing plant configuration and operations were covered by, and consistent with, the process description and safety basis in the selected NCSEs. The inspectors observed testing, reviewed process and system descriptions, drawings, and maintenance records to verify that engineered controls established in the NCSEs were included in the SAR, maintenance plans, and drawings and were being implemented in the field. The engineered controls reviewed included those associated with in-line monitor #2. The inspectors reviewed operating procedures and postings to verify that selected administrative controls established in the NCSEs were included. The administrative controls reviewed included those associated with the performing initial surveys of drums to limit their mass. The inspectors observed operators performing a survey and interviewed operators and engineers to verify that administrative actions established in the NCSEs were understood and implemented as specified in the NCSE.

The inspectors reviewed the ISA summary and supporting ISA documentation to determine whether the controls identified in the ISA were supported by technical bases in the NCSEs. These controls included those in SAR Appendix 15.20 Scenarios NC-4, NC-5, NC-6, NC-8, and NC-10; SAR Appendix 15.21 Scenarios OSA-1 and OSA-2; and those associated with in-line monitor #2 as discussed above.

Criticality Operational Oversight

The inspectors reviewed records of NCS audits and weekly NCS engineer walkdowns to determine whether NCS staff routinely assessed field compliance with established NCS controls. The records of NCS audits reviewed included the 2nd Quarter 2020 NCS Violation & Observation Summary and the 3rd Quarter 2020 NCS Audit.

The inspectors reviewed selected activities that monitor process conditions from the NCSEs listed above to verify that the licensee had established controls on long-term accumulations. Specifically, the inspectors reviewed in-line monitor testing and surveys of drums to verify that the instruments used were appropriately calibrated and IROFS setpoints and limits accounted for uncertainties in material characterization, geometric configuration, and measurement error.

Criticality Programmatic Oversight

The inspectors reviewed the selected NCSEs listed in the Attachment to verify that they were performed in accordance with NCS program procedures and received appropriate independent review and approval.

The inspectors conducted interviews and reviewed records to determine whether NCS staff reviewed new and/or revised fissile material operations and procedures including maintenance plans consistent with program procedures and at a level commensurate with their significance.

The inspectors interviewed licensee management and senior NCS engineers responsible for qualifying new staff to verify that NCS engineers had the necessary education and experience and were qualified in accordance with license requirements for the tasks they were performing. The inspectors reviewed the qualification records listed in the Attachment to verify that the education and experience requirement of the Section 2.1.6, “Nuclear Criticality Safety Engineers,” of the license application were satisfied.

Criticality Incident Response and Corrective Action

The inspectors observed testing of an emergency generator that supplies power for the criticality accident alarm system detectors and annunciators. Routine testing was also performed, to determine whether alarm signals were audible within the areas required to be evacuated.

The inspectors reviewed selected NCS-related CAP entries and safety concern analyses to verify that anomalous conditions were identified and entered into the CAP and that they received the required level of follow-up by NCS consistent with license commitments.

The inspectors reviewed the associated corrective actions to verify they were appropriate to correct the condition. Additionally, the inspectors reviewed the selected CAP entries to assess whether the licensee followed regulatory requirements and procedures with regards to reporting plant conditions to the NRC. The CAP entries reviewed are listed in the Attachment.

b. Conclusion

No violations of more than minor significance were identified.

B. Radiological Controls

1. Radiation Protection Quarterly (Inspection Procedure 88135.02)

a. Inspection Scope

The inspectors performed a review and observation of posted radiologically controlled areas to verify compliance with license application Chapter 4, "Radiation Safety;" the Radiation Protection Manual; and implementing procedures. On November 19 and 20, 2020, the inspectors reviewed radiation work permit (RWP) 20-0053, "Replacement of Chemical Vaporizer Orifice and Cleaning and/or Replacement of Chemical Line Associated with WS-300 in SFF," to verify that it contained required work instructions, was posted in the work area for employee review, and that workers signed the RWP. In addition, the inspectors performed partial reviews of select RWPs during the inspection period in different operational areas to verify RWP compliance. Documents reviewed are listed in Section 4 of the Attachment.

The inspectors reviewed the licensee's radiation protection program to verify compliance with 10 CFR 20, "Standards for Protection Against Radiation," and license requirements. During weekly onsite visits, the inspectors toured radiation-controlled areas to verify that radiological signs and postings accurately reflected radiological conditions within the posted areas. The inspectors observed plant personnel as they removed protective clothing at controlled area step-off pads and as they performed various tasks to verify that proper protective equipment was used to prevent contamination. The inspectors also observed plant employees as they performed exit monitoring at the controlled areas' exits to verify that monitoring instructions were followed at the exit point.

b. Conclusion

No violations of more than minor significance were identified.

2. Radiation Protection (Inspection Procedure 88030, Appendix A, "Program, Monitoring, and Controls")

a. Inspection Scope

The inspectors evaluated selected aspects of the licensee's radiation protection program to verify compliance with selected portions of 10 CFR 20, the facility's license, and applicable procedures.

The inspectors reviewed audits, procedures, the 2020 as low as reasonably achievable (ALARA) meeting minutes, and the 2019 ALARA report to verify that the program was being documented in accordance with 10 CFR 20.1101(a) and reviewed at least annually to comply with 10 CFR 20.1101(c). The inspectors also reviewed the above documents and interviewed licensee managers, supervisors, and technicians to verify that the radiation protection program's function and responsibilities were independent from production and other operations.

The inspectors reviewed procedures and interviewed licensee staff to verify that the licensee implemented the program in accordance with license requirements outlined in Chapter 4, "Radiation Safety," and Chapter 11, "Management Measures," of the license application.

The inspectors reviewed an RWP and its associated work packages to verify that the licensee complied with Chapter 4 of the licensee application and the procedure for RWPs. The inspectors observed work being performed under this RWP to verify that the requirements listed were implemented in the field. Documents reviewed are listed in Section 4 of the Attachment.

The inspectors observed various radiation detection devices for each ionizing radiation type to verify that the licensee had a system for identifying instruments and equipment used for quantitative radiation measurements and due dates for periodic calibration and/or functional testing as per 10 CFR 20.1501(c). The inspectors observed personnel monitoring stations and survey instruments to verify that there were no conditions that could impact the functionality of the detectors and that they alarmed when response checked by radiation safety personnel.

The inspectors observed contamination surveys in the RTR and filler areas to verify that the licensee performed scheduled contamination surveys to satisfy the requirements of 10 CFR 20.1501(a) and (b). The inspectors reviewed contamination records for any contamination survey results that exceeded in-house action levels to determine whether the licensee took the proper response action in accordance with the procedure. The inspectors reviewed the radiation survey records to verify compliance with the procedure.

The inspectors walked down personnel, process, storage areas within UR, RTR, filler, radiological waste storage, the Lynchburg Technology Center (LTC), and wastewater treatment to verify compliance with the posting requirements in 10 CFR 19.11, 10 CFR 20.1902, 10 CFR 20.1904, procedures, and Chapter 4 of the license application. During these walkdowns, the inspectors also observed whether access to contamination and radiation areas was controlled as per Chapter 4 of the license application and that radiological signs and postings reflected radiological conditions within the posted areas.

The inspectors reviewed the sealed sources under NRC jurisdiction to verify compliance with Chapter 4 of the license application.

b. Conclusion

No violations of more than minor significance were identified.

3. Radioactive Waste Processing, Handling, Storage, and Transportation (Inspection Procedure 88035)

a. Inspection Scope

The inspectors reviewed the licensee's handling and storage of radioactive waste to determine whether the licensee had established and implemented procedures and other documentation in accordance with the requirements of 10 CFR 20 and 10 CFR 61, "Licensing Requirements for Land Disposal of Radioactive Waste," as applicable to low-level radioactive waste form, classification, stabilization, and shipment manifests/tracking. Documents reviewed are listed in Section 4 of the Attachment.

The inspectors reviewed procedures to verify compliance with Chapter 11 of the license application. The inspectors also reviewed the procedures to verify that they delineated responsibilities related to radioactive waste management. The inspectors observed that operators and technicians were familiar with their responsibilities and, based on a review of records, performed the tasks in accordance with these procedures.

The inspectors reviewed the latest audit report to verify that findings from this audit were entered into the licensee's CAP for resolution as required by the licensee application.

The inspectors reviewed the licensee's process for classifying low-level radioactive waste and mixed waste in order to verify compliance with 10 CFR 61.55 and 10 CFR 20, Appendix G, "Requirements for Transfers of Low-Level Radioactive Waste Intended for Disposal at Licensed Land Disposal Facilities and Manifests." Specifically, the inspectors reviewed the procedures for classifying waste as well as related records. The inspectors reviewed the licensee's program for packaging waste in order to verify that the waste form met the requirements of 10 CFR 61.56 and 10 CFR 20, Appendix G. The inspectors also reviewed records to verify accountability and longevity of storage was being tracked as per procedures.

The inspectors walked down waste storage areas to verify that: radioactive waste containers were properly labeled for activity levels, tracking, and contents; stored in a stable configuration (stacking); containers were not displaying signs of deformation or degradation; and areas were posted and controlled as required by procedures. The inspectors walked down both indoor and outdoor waste storage areas. The inspectors also walked down the waste compactor area to verify that access and postings were maintained in accordance with procedures.

The inspectors reviewed the licensee's process for labeling and tracking radioactive waste shipments in order to verify compliance with procedures. Specifically, the inspectors reviewed documentation that specified actions to be taken should the shipments not reach the intended destination in the time specified. Additionally, the inspectors reviewed the procedures for placement, inspection, and repackaging of radioactive waste in order to verify compliance with these procedures.

b. Conclusion

No violations of more than minor significance were identified.

4. Effluent Control and Environmental Protection (Inspection Procedure 88045)

a. Inspection Scope

The inspectors evaluated whether the licensee had established, maintained, and implemented an effluent control and environmental protection program in accordance with the requirements of Chapter 9, “Environmental Protection,” and Chapter 11 of the license application. Specifically, the inspectors reviewed environmental program documents, observed activities, and conducted interviews to verify that the program was being implemented in accordance with the requirements in the documents mentioned above.

The inspectors reviewed events identified in the licensee’s CAP to verify that deviations from procedures and unforeseen process changes were documented and investigated.

The inspectors interviewed licensee staff to evaluate potential new areas of contamination in the surrounding environment or subsurface of the facility. The inspectors reviewed pertinent documents to determine that the licensee, to the extent practical, conducted operations that minimized the introduction of residual radioactivity into the local environment surrounding the facility, including subsurface soils and groundwater in accordance with 10 CFR 20.1406(c).

The inspectors reviewed procedures and observed performance of tasks related to effluent control and environmental protection to verify that the procedures were clearly written, properly implemented, and delineated responsibilities related to effluent controls. The inspectors observed technicians performing effluent controls and environmental protection activities to verify that the technicians were familiar with their responsibilities and they performed tasks in accordance with onsite procedures.

The inspectors reviewed calibration records for the in-line monitor for the plant stream that monitors the process liquid effluent before the effluent is drained to the retention tanks. The calibration was performed in accordance with procedure RP-07-079, “Calibration and Operation of the Canberra In-Line Waste Monitors,” Rev. 8. These in-line monitors are IROFS as per SAR 15.21, “Low-Level Radioactive Waste Process.”

The inspectors reviewed the second half 2019 semi-annual effluent reports and the first half 2020 effluent reports to evaluate compliance with 10 CFR 70.59. The inspectors also reviewed the airborne portion of the public dose assessment to verify compliance with the ALARA constraint required by 10 CFR 20.1101(d). The inspectors verified that the average annual effluent concentration released in 2019 did not exceed the values specified in 10 CFR 20, Appendix B, Table 2, “Effluent Concentrations.” The inspectors reviewed the 2019 external radiation source measurements taken from dosimeters positioned along the licensee’s property boundary to verify that the total dose to the public individual likely to receive the highest dose from the licenses operation did not exceed the regulatory limit in 10 CFR 20.1301(a)(1) for calendar year 2019. The inspectors observed records to verify that the licensee maintained records of effluent discharges to comply with 10 CFR 20.2103(b)(4).

The inspectors reviewed records of sampling results for soil, forage, and groundwater to evaluate compliance with procedure RP-08-001, “Collection and Analysis of Environmental Soil, Surface Water, Sediment, Vegetation, & Fallout Samples,” Rev. 19, and Chapter 9 of the license application.

b. Conclusion

No violations of more than minor significance were identified.

C. Facility Support

1. Plant Modifications (Inspection Procedure 88070)

a. Inspection Scope

The inspectors reviewed the licensee’s configuration management program to determine whether the licensee established an effective program capable of evaluating, implementing, and tracking modifications to facility processes in accordance with 10 CFR 70.72 and license application Chapter 11, “Management Measures.” The inspectors reviewed configuration management procedures and interviewed licensee staff to verify the configuration management program was being implemented in accordance with the aforementioned requirements.

The inspectors reviewed the licensee’s configuration management program to verify it addressed preparation of plant modification design packages in accordance with QWI 5.1.12, “Change Management,” and Chapter 11 of the license application. The inspectors also verified the program had adequate provisions in place to prevent plant modifications from degrading performance capabilities of IROFS or other safety controls that were part of the safety design basis.

The inspectors reviewed a selection of plant modification design packages implemented since the last plant modification inspection was conducted. The inspectors reviewed these packages and interviewed licensee staff to verify the change packages were prepared, reviewed, and completed by the licensee in accordance with QWI 5.1.7, “Safety Evaluation Requests,” and QWI 5.1.12, “Change Management.” Specifically, the inspectors confirmed that the design packages contained the technical basis for the change, the impact of the change on safety and health or on the control of licensed material, the necessary training prior to operations, the authorization requirements for the change, and the impacts of the change to the ISA or other safety program information developed in accordance with 10 CFR 70.62. The inspectors reviewed change packages to verify that the licensee identified applicable post-maintenance installation and testing requirements and performed them prior to implementing the plant modifications.

A sample of 10 CFR 70.72 evaluations were reviewed by the inspectors to determine whether the licensee adequately evaluated the need for NRC pre-approval of select facility modifications. The inspectors also reviewed the training records of licensee personnel conducting the 10 CFR 70.72 evaluations to verify they were qualified to perform the evaluations in accordance with QWI 5.1.12.

The inspectors performed walkdowns of TRISO fuel area to verify that modifications were installed in accordance with approved design documents. The inspectors also reviewed related onsite documentation to verify that it was updated promptly as required by 10 CFR 70.72(e).

The inspectors reviewed the most recent audit and assessment of the licensee's configuration management program to verify the licensee identified issues and entered them into the CAP in accordance with Chapter 11 of the license application.

b. Conclusion

No violations of more than minor significance were identified.

2. Identification and Resolution of Problems (Inspection Procedure 88135.02)

a. Inspection Scope

The inspectors reviewed a sample of items entered into the CAP during the inspection period to ensure that entries pertinent to safety, security, and non-conforming conditions were identified, investigated, and tracked to resolution in accordance with implementing procedure QWI 14.1.1, "Preventive/Corrective Action System." The inspectors conducted interviews with licensee staff and reviewed documents to verify that issues of high safety significance were identified and reviewed for apparent causes as required. The inspectors reviewed issues requiring extent-of-condition and/or extent-of-cause reviews to verify that the reviews were completed and documented in the applicable corrective action records. The inspectors also reviewed corrective actions to prevent recurrence of previous issues to verify that they were identified in the CAP and were reviewed and tracked to completion.

Additionally, the inspectors conducted periodic reviews of licensee audits and third-party reviews, of safety-significant processes to verify effectiveness and alignment with requirements of the CAP.

Specifically, the inspectors reviewed the following:

- BWXT NOG-L and LTC Radiation Safety Triennial Audit, October 2018

b. Conclusion

No violations of more than minor significance were identified.

3. Permanent Plant Modifications (Inspection Procedure 88135.17)

a. Inspection Scope

The inspectors reviewed plant modification SER 19-027 (Phase 1), "Modify the Internal Dimensions of the U-Mo HIP Cans," to verify compliance with the license and the requirements of 10 CFR 70, "Domestic Licensing of Special Nuclear Material." Specifically, the inspectors evaluated the impacts to associated IROFS and ISA accident sequences in the selected modifications.

The inspectors conducted field walkdowns of portions of the modification to validate that the as-found plant configurations were in alignment with the change request documentation and to evaluate the material condition of any associated IROFS. In addition, the inspectors reviewed updates and changes to the ISA and procedures affected by the modifications, as applicable.

The inspectors reviewed the SER package for accuracy and to verify adherence to BWXT's change management process, QWI 5.1.12, "Change Management." The inspectors also reviewed the package to verify that BWXT identified and addressed any impacts to the ISA resulting from the modification as required.

b. Conclusion

No violations of more than minor significance were identified.

4. Post-Maintenance Testing (Inspection Procedure 88135.19)

a. Inspection Scope

The inspectors reviewed the post-maintenance test (PMT) listed below to verify compliance with license application Chapter 11, "Management Measures," and test procedures and/or WO instructions to confirm functional capability of SSCs following maintenance. The inspectors reviewed the licensee's completed test procedures to verify that SSC safety function(s) that may have been affected by the maintenance activity were adequately tested and that the procedure had been reviewed and approved, as required. The inspectors verified that test results adequately demonstrated restoration of the affected safety function. Furthermore, the inspectors verified that issues associated with the PMT were identified and entered in the licensee's CAP. Additional documents reviewed are listed in Section 4 of the Attachment.

- WO 20286434, "Uranium Recovery Drum Dryer Steam Condensate Line Check Valve Replacement", conducted on June 7, 2020.
- WO 20292831, "Uranium Recovery Primary Extraction PLC Chassis Replacement," completed on October 22, 2020.

b. Conclusion

One Severity Level IV violation of NRC requirements was identified. The violation is described below.

Introduction: The inspectors identified an NRC-identified, Severity Level IV, cited violation of License Condition S-1 for the licensee's failure to perform PMT following corrective maintenance as described in Section 11.2.2, "Corrective Maintenance," of the license application.

Description: On October 21, 2020, NRC inspectors observed surveillance testing of in-line monitor #2 and its associated pumps' shutoff interlock in the UR area in accordance with maintenance plan (MP)-3168, "Primary Condensate Tank In-Line Monitor #2 Alarm Test". The in-line monitor and pump interlock are credited as an IROFS for the prevention of nuclear criticality. Specifically, the in-line monitor continuously measures waste solutions to assure its U-235 concentration is within limits prior to entering the low-level radioactive waste drain.

A shutdown signal is generated for each of the two in-line monitor pumps when a high U-235 concentration is detected, stopping transfer of the waste solution. Although not part of the IROFS function, the interlock also repositions a three-way valve on the discharge of each pump to place the pump's discharge flow path in recirculation mode (i.e., back to the supply tank). The inspectors observed that the pumps shut off, as required, during the test but the two discharge valves did not reposition. Subsequently the valve for pump #1 was repaired in the field by a minor adjustment of the valve packing nut and coupling. However, initial troubleshooting for pump valve #2 determined that the programmable logic controller (PLC) output module would not generate the appropriate voltage signal. The licensee replaced the backplane PLC rack chassis (WO 20292831) to correct the problem; however, the valve still did not work properly. As a result, operations left pump/valve #2 out-of-service and placed the in-line monitor back in service with just pump/valve #1.

While evaluating the licensee's PMT in support of placing the in-line monitor back in service following troubleshooting of the PLC, the inspectors noted that the functional testing was limited to manual cycling of the pump/valve #1 and did not test the pump interlock IROFS function, which could have been affected by the replacement of the PLC chassis. The inspectors determined that the test conducted was not in accordance with PMT requirements specified in Section 11.2.2 of the license application Chapter 11, "Management Measures," which required that functional testing be conducted, as necessary, to assure the proper function of the IROFS at the completion of any corrective maintenance activity.

The inspectors raised their concern to licensee management who then requested operations to test the pump interlock IROFS function. The licensee identified two additional IROFSs, in-line monitor #1 and in-line monitor #3, connected to the same PLC that could have also been impacted by the maintenance activity. All in-line monitors and associated interlocks were subsequently tested satisfactorily. The licensee captured this issue in their CAP under corrective action (CA) 2020-1545. The licensee determined that the inadequate PMT was not isolated to the corrective maintenance work conducted under WO 20292831 as there was a general misconception, limited to uranium recovery area personnel, that PLC components for PLC-driven IROFS were not part of the IROFS boundary and, therefore, did not warrant testing of the IROFS function following maintenance. Additionally, the licensee's maintenance and testing program relied on safety control field labels applied to IROFS components in order for personnel to identify whether or not an IROFS could be impacted by the maintenance activity and to identify the appropriate PMT. PLC racks and cabinets associated with IROFS were typically not labeled as IROFS which re-enforced the misconception.

Analysis: The inspectors determined that the failure to functionally test in-line monitor IROFS following replacement of the PLC chassis was a violation of Section 11.2.2 of the license application. The inspectors determined the violation was more than minor based on the screening criteria of Inspection Manual Chapter 0616, "Fuel Cycle Safety and Safeguards Inspection Reports," Appendix B, "Examples of Minor Violations." The inspectors determined the violation could reasonably be considered indicative of a programmatic deficiency per Question 3 of the General screening questions because the failure to perform adequate PMTs following corrective maintenance was considered a failure to implement an adequate program or process to establish and communicate IROFS boundaries to licensee personnel.

The inspectors determined there were no actual safety consequences that occurred due to the inadequate PMT because subsequent testing confirmed the functionality of the in-line monitor IROFS. Therefore, the performance requirement of 10 CFR 70.61(b) was still met, and the potential safety significance of this issue was low. The inspectors determined that the violation was of Severity Level IV significance because the issue aligned with Example 6.2.d.1 of the NRC Enforcement Policy for failures to meet the requirements of 10 CFR 70.61, "Performance Requirements," or Appendix A, "Reportable Safety Events," to 10 CFR Part 70, where the failure did not result in a Severity Level I, II, or III violation. Additionally, in accordance with Section 2.2.2 of the NRC Enforcement Policy, violations that are less serious but are of more than minor concern and result in no or relatively inappreciable potential safety consequences are characterized as Severity Level IV violations.

Enforcement: License Condition S-1 states, in part, that the license is for "use in accordance with the statements, representations and conditions in Chapters 1 through 11 of the application." Section 11.2.2, "Corrective Maintenance," of the license application Chapter 11, "Management Measures," stated, in part, that "At completion of any corrective maintenance, functional tests, as necessary, shall be conducted to assure the proper function of the IROFS. The functional tests determine that the IROFS is performing properly." Contrary to the above, on October 21, 2020, the licensee failed to assure the proper function of an IROFS following the completion of corrective maintenance as required by Section 11.2.2 of the license application. Specifically, the licensee failed to perform a functional test following the completion of corrective maintenance on the PLC associated with the in-line monitors #1, #2, and #3. This violation is being treated as a cited violation consistent with Section 2.3.2 of the Enforcement Policy because it was NRC identified.

The licensee took corrective actions to properly test the functionality of the affected in-line monitor IROFS restoring compliance on October 23, 2020. Additionally, the licensee planned to (1) complete an extent-of-condition review to identify other PLC-driven IROFS and implement measures to ensure they are not adversely affected by PLC-related maintenance and (2) improve QWI level guidance to aid in defining safety class 'B' control boundaries (both IROFS and non-IROFS) and providing criteria for completion of PMT to verify the functionality of the affected control. This issue was entered in the licensee's CAP as CA 2020-1545.

This is a violation of the requirements of Section 11.2.2 of license application Chapter 11. A Notice of Violation is attached and will be tracked as VIO 70-27/2020-004-01, "Failure to Perform Post-Maintenance Testing of Primary Condensate Tank In-Line Monitor IROFS."

5. Surveillance Testing (Inspection Procedure 88135.22)

a. Inspection Scope

The inspectors reviewed completed test records for the surveillance tests listed below to verify compliance with license application Chapter 11, "Management Measures," and that risk-significant and safety-related systems met the requirements of the ISA. The inspectors verified the testing effectively demonstrated that the SSCs were operationally capable of performing their intended safety functions and fulfilled the intent of the associated safety-related equipment test requirements. Additional documents reviewed are listed in Section 4 of the Attachment.

- MPs 3346 and 3348 through 3352, Uranium Recovery Evaporators 1 through 6 Pressure Relief Valve (IROFS) Annual Replacement and 'Pop-Test', conducted on March 16, 2020

b. Conclusion

No violations of more than minor significance were identified.

D. Other Areas

1. Observations of Security Personnel and Activities

a. Inspection Scope

During weekly onsite visits, the inspectors conducted observations of security force personnel and activities to verify that the activities were consistent with security procedures and regulatory requirements relating to nuclear plant security.

The inspectors observed a force-on-force tactical response exercise conducted the evening of October 7, 2020, to verify compliance and assess the effectiveness of the licensee's implementation of protective strategies in accordance with NRC-approved security plan and procedures. The inspectors verified that the licensee's critique process identified and captured weaknesses noted during the exercise as required.

These quarterly resident inspectors' observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status reviews and inspection activities.

b. Conclusion

No violations of more than minor significance were identified.

2. (CLOSED) Violation 70-27/2018-006-03: Failure to Maintain Adequate Process Safety Information for Process Systems Associated with the UAl_x Glovebox Systems as Required by 10 CFR 70.62(b)

This VIO was opened in NRC Inspection Report (IR) 70-27/2018-006 (ML18067A098) and was discussed and inspected in NRC IRs 70-27/2018-005 (ML19030A138), 70-27/2019-002 (ML19107A163), 70-27/2019-003 (ML19211D562), 70-27/2019-005 (ML20024F642), and 70-27/2020-001 (ML20121A219). The events surrounding this VIO were reported to the NRC as Event Notification (EN) 52840 and discussed in detail in NRC IR 70-27/2017-007 (ML17251A001). Licensee staff discussed their completed and planned corrective actions in "60-Day Written Report for Event Notification Number 52840," dated August 9, 2017 (ML17226A037) and "60-Day Report Additional Information," dated October 16, 2017 (ML19007A047).

During this inspection, the inspectors reviewed progress toward completion of the corrective actions to establish a set of revision controlled NCS evaluations containing the safety basis for all processes. This review was conducted through review of the newly issued NCS-PA-37-00004, “Nuclear Criticality Safety Process Analysis of Higher Tier Vertical Dry Operations,” and a revision-controlled document containing supporting calculations, “NCS-TR-0050, Nuclear Criticality Safety Technical Reference for Higher Tier Vertical Dry Operations.”

Considering this review and the reviews conducted in previous inspections, the inspectors have determined that the licensee has demonstrated adequate progress toward completion of the corrective actions identified in the “60-Day Written Report for Event Notification Number 52840,” and the “60-Day Report Additional Information”. This item is closed.

E. Exit Meeting

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

- On October 22, 2020, regional inspectors presented the plant modifications and NCS inspection results to the licensee’s Environmental, Safety, Health, and Safeguards Department Manager, Mr. R. Freudenberger, and other members of the licensee staff.
- On November 19, 2020, regional inspectors presented the radiation protection inspection results to Mr. R. Freudenberger and other members of the licensee staff.
- On January 28, 2021, the resident inspector presented the quarterly inspection results to Mr. J. Burch and other members of the licensee staff.

SUPPLEMENTAL INFORMATION

1. KEY POINTS OF CONTACT

Licensee Personnel

Name	Title
J. Burch	Vice President and General Manager
R. Freudenberger	Department Manager, Environmental, Safety, Health, and Safeguards
W. Richardson	Department Manager, Uranium Processing and Research Reactor
A. Rander	Department Manager, Security
D. Spangler	Section Manager, Nuclear Safety and Licensing
L. Morrell	Section Manager, Environmental Protection and Industrial Safety
D. Faidley	Unit Manager, Nuclear Criticality Safety Manager
L. Ragland	Unit Manager, Recovery and Maintenance
C. Terry	Unit Manager, Licensing and Safety Analysis
K. Conway	Unit Manager, Radiation Protection
J. Calvert	Environmental, Safety, Health and Security Program Manager
M. Edstrom	Fire Protection Engineer

2. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

VIO	70-27/2020-004-001	Failure to Perform Post-Maintenance Testing of Primary Condensate Tank In-Line Monitor IROFS (Section C.4)

Closed

VIO	70-27/2018-006-03	Failure to Maintain Adequate Process Safety Information for Process Systems Associated with the UAlx Glovebox Systems as Required by 10 CFR 70.62(b) (Section D.2)

3. INSPECTION PROCEDURES USED

88015	Nuclear Criticality Safety
88030	Radiation Protection
88035	Radioactive Waste Processing, Handling, Storage, and Transportation
88045	Effluent Control and Environmental Protection
88070	Plant Modifications
88135	Resident Inspection Program for Cat I Fuel Cycle Facilities
88135.02	Plant Status
88135.04	Operational Safety
88135.05	Fire Protection (Quarterly)
88135.17	Permanent Plant Modifications
88135.19	Post-Maintenance Testing
88135.22	Surveillance Testing

4. LIST OF DOCUMENTS REVIEWED

SAFETY OPERATIONS

88135 and 88135.02 – Plant Operations

Corrective Action Program Records
2018-1537, RTR Encapsulated Fuel Breached during Blanking Operation. Incident date 11/01/2018, Report date 10/03/2020
2020-0101, NCS Posting Noncompliance for Fuel Pack Handling Operation. Incident Date 01/16/2020, Report date 12/04/2020
2020-0369, SFF FAS Interlock Test Deficiencies. Incident date 03/06/2020, Report date 10/12/2020
2020-0385, SFF FAS Gas Detector Response Time Delay. Incident date 02/28/2020, Report date 10/12/2020
2020-0506, SFF FAS Toxic Gas Detector Went into Alarm due to End of Life. Incident Date 03/29/2020, Report date 10/12/2020
2020-0798, RTR U-Mo Fuel Pack Breached/Cracked during Milling Operation, Incident Date 06/11/2020, Report date: 10/27/2020
2020-0805, Unnecessary Moderating Material on Rack. Incident date 06/12/2020, Report date 10/21/2020
2020-1438, Operator Began Annealing Process in Manual Instead of Automatic. Incident date 09/29/2020, Report date 11/04/2020
2020-1176, RTR HFIR Compacts Damaged during Vacuum Annealing Operation, Incident date 08/17/2020, Report date 11/11/2020
2020-1533, Evaluate if MP-3168 Changes are Needed to Satisfy Management Measures for In-Line Monitor #2 per SAR 15.12. Incident date 10/21/2020, Report date 12/07/2020

Drawing
UPRR 10072, Conversion Area Uranium Dissolver 2 Process and Instrumentation Diagram, Rev. 2

Nuclear Criticality Safety Records
NCS Posting 15.27-028, Element Workstation, Rev. 1
NCS Posting 15.37-018, Machining Sectioning Facility, Rev. 1

Procedures
M35-037, SFF Checklist (U), Rev. 61
OP-0061242, Operating Procedure for In-Line Monitor System (U), Rev. 33
OP-1001828, FAS Interlocks and Furnace Testing, Rev. 37
OP-1007886, Uranium Metal Dissolution Using Dissolver 2, Rev. 16
OP-1020897, Vacuum Annealing of Preassemblies, Rev. 7
OP-1046323, TRISO FAS Detector Calibration (U), Rev. 2
RP-04, Internal Exposure Control, Rev. 16

Other Documents
CHG-6045, Revision of OP-1007886, Approved April 9, 2019
CHG-6321, Revision of OP-1007886, Approved June 5, 2019
CHG-7998, Revision of OP-1007886, Approved August 24, 2020
RP Form-13-002, Technician's Daily Inspection Reports, Oct. 15 – Nov. 17, 2020
SAR 15.12, Liquid and Solid Waste Handling Processes in Uranium Recovery, Rev. 83

88135.04 – Operational Safety

Corrective Action Program Records

2015-0982, Dummy U-Mo Foils Stored in Non-Fuel Workstation, Incident date 06/17/2015, Report date 11/10/2020,2015-1254, NCS Spacing Non-Conformance for Transport Cart 1622, Incident date 08/17/2015, Report date 12/15/2020

2016-0309, U-Mo Ingot Pack Assembly Cracked during Processing, Incident date 03/03/2016, Report date 11/10/2020

2016-0315, NCS Spacing Bumper Damage on Cart 1722, Incident date 03/06/2016, Report date 12/15/2020

2018-0448, Incorrect NCS Release Listed in SAR 15.26 for Transport Cart, Incident date 03/30/2018, Report date 12/15/2020

2018-1483, RTR Assembly Welding Not Consistent with Procedure, Incident date 10/25/2018, Report date 11/10/2020

2019-0838, Material Bubbled Out of Container During Furnace Run, Incident date 6/14/2019, Report date 11/10/2020

2020-1079, Damaged Spacing Bumper IROFS for Fuel Transport Cart, Incident date 08/08/2020, Report date 12/15/2020

DocQnet CA Report Search for Pack Assembly, and '15.26' for date range 01/01/2016 – 12/15/2020

Drawings

CM102-0-A100-2, Rack Proto Assy, dated September 22, 2006

LP-2703, Cooling Cart, Rev. 1

LP-2797, Loading Cart, Rev. 2

LT-4535, Poison Cart, Rev. 1

LT-4797, Multi-Purpose Transfer Cart, Rev. 10

LT-6541, Storage Rack, Rev. 2

UPRR-20051, Storage Box for U-Mo Foils, Rev. 2

UPRR-20052, Cart/Rack for U-Mo Storage Boxes, Rev. 3

UPRR-20053, Cart for U-Mo Packs and Storage Boxes, Rev. 3

UPRR-20054, Cart for Cooling & Transfer of U-Mo Packs, Rev. 2

UPRR-20062, U-Mo Acid Rinse Tray for RTR, Rev. 2

UPRR-20138, U-Moly - HIP Can, Rev. 1

UPRR-20139, U-Moly Mini/Plate Capsule Cart, Rev. 0

Nuclear Criticality Safety Records

NCS-2016-063, NCS Safety Analysis to Support HEU U-Mo Foil Fabrication per SER 15-001 Phase 2 to Support HEU Mini-Plate Manufacture, dated May 23, 2019

NCS-2014-141, Nuclear Safety Release for Completion of SER 14-001, Phase 01, dated December 2, 2014

NCS-2015-071, NCS Safety Analysis for U-Mo Pumping Station in RTR per SER 15-014, Phase 1, dated September 9, 2015

NCS-2015-095, Nuclear Safety Release for SER 15-001 Phase 1: [U-MOL] Alternate Processing of U-Mo Foil Processing – Processing of DU Ingot Material, dated August 28, 2015

NCS-PA-26-00001, Nuclear Criticality Safety for SAR 15.26 Pack Assembly, Rev. 0

NCS Posting 15-23-020, RTR Metallurgical Laboratory, Rev. 4

NCS Posting 15-23-039, RTR Metallurgical Laboratory Sink, Rev. 2

NCS Posting 15-23-045, RTR Hot Roll Furnace Area, Rev. 2
NCS Posting 15-26-001, Four Quadrant Horizontal Rack, Rev. 4
NCS Posting 15-26-005, Furnace, Rev. 4
NCS Posting 15-26-025, Cooling Rack, Rev. 4
NCS Posting 15-26-029, Cooling Rack, Rev. 0
NCS Posting 15-26-019, Furnace Loading Cart, Rev. 4
NCS Posting 15-44-001, U-Mo Etching Station Rev. 1
NCS Posting 15-44-002, U-Mo Workstation, Rev. 1
NCS Posting 15-44-003, U-Mo 3-Tier Storage Box Cart/Rack, Rev. 1
NCS Posting 15-44-004, U-Mo Single Tier Cart, Rev. 1
NCS Posting 15-44-004, U-Mo Pack & Storage Box Rack, Rev. 1
NCS Posting 15-44-006, U-Mo Vacuum Anneal Furnace / Front Loader, Rev. 1

Procedures

OP-0010201, (Title Classified), Rev. 68
OP-0010401, (Title Classified), Rev. 50
OP-1001067, Cleaning Sludge Tank and/or Replacing Drain Line Filter in RTRT Met Lab (U), Rev. 2
OP-1010860, Handling DE Plate Sections to Maintain U235 Accountability, Rev. 1
OP-1042717, Acid Cleaning of U-Mo Coupons and Ingots (U), Rev. 6

Other Documents

Action Item #03925 created on August 29, 2019
CHG 1169, Revised/Updated OP-1042717: Acid Cleaning of U-Mo Coupons and Ingots
CHG 3115, New U-Mo Shear in RTR Controlled Area (Checkpoint 8), Approved August 14, 2017
CHG 3893, New Cart for U-Mo Mini Foils, Approved January 8, 2018
CHG 5906, Homogenization of HEU U-Mo Material, Approved February 25, 2019
CHG 7130, Change to SAR 15.44 per Action Item #03925, Approved November 27, 2019
Change Review (CR)-1043743, Install New Pump Filter and Tubing for Waste U-Mo Acid/Rinse Disposal (U), Rev. 00
CR-1043887, U-Molly Support Tray for RTR Met Lab Sink (U), Rev. 00
CR-1044577, Revise of OP-1042717 to Rev. 2 (U), Rev. 00
CR-1044986, Add Engineered IROF/Requirements to U-Mo Drawings (U). Rev. 00
History of SER 15-014 Phase 01, U-Mo Solution Pumping Station RTR Met Lab
N-517, 10 CFR 70.72 Change Evaluation Checklist (U), Rev. 09
NPN-QC-1151, Uranium Processing and Research Reactors OJT- RTR Operators (QC & Operations), completed on April 2019 for BDJ, April 2019 for CCE, and July 2020 for KBS.
SAR 15.26, Fuel Pack Assembly Process, Rev. 87
SAR Appendix 15.26, Rev. 34
SAR 15.44, RTR (Research & Test Reactors) Uranium Molybdenum (U-Mo) Foil Production, Rev. 17
SAR Appendix 15.44, Rev. 08

88135.05 – Fire Protection Quarterly

Corrective Action Program Record
2020-1455, Small Metal Chip Fire during Machining Operation, Incident date 10/06/2020, Report date 10/09/2020

Corrective Action Written as a Result of Inspection Activities
CA20-1788, Smoke Detectors not Installed in RTR QC Area and Adjacent Break Area. Incident date 12/21/2020

Drawing
STEC5_1003, Site Plan – BWXT Lynchburg VA - Fire Valve and Hydrant Locations, Rev. 4

Other Documents
Pre-Fire Plan, Map Section 9, Bays 11, 12, and 13, dated June 5, 2014
Facility Siting Review 5, Locations of Focus: Bay 1A, Bays 4A through 10A, Bay 12A, Bays 2 through 13, Rev. 4
IH&S Fire Protection Impairment Report No. 20-023, Isolate Water Main Under Bay 8, December 4, 2020

88015 – Nuclear Criticality Safety

Corrective Action Program Records
2020-0488 2020-0805 2020-0954 2020-1533

Condition Action Written as a Result of the Inspection
2020-1533

Drawings
111E0976, Fuel Assembly VAFF, Rev. C-3
111E0986, Fuel Element VAFF, Rev. B
UPRR 30046, Bay 14A Steam Condensate Piping & Instrumentation Diagram (PI&D), Rev. 7
UPRR-30147B, Inline Monitors 1, 2, 3 P&ID, Rev. 1

Nuclear Criticality Safety Records
NCS-2018-092, Qualification of Matthew Nash as an NCS Auditor, dated November 9, 2018
NCS-2020-053, NCS Safety Concern for Fuel Outside of WS-140 Furnace Retort, dated June 9, 2020
NCS-2020-086, NCS Safety Concern for Excess Moderating Material on A-Frame Rack in Machine Shop – CA202000954, dated September 15, 2020
NCS-2020-087, NCS Safety Concern for Excess Moderating Material on A-Frame Rack in Machine Shop – CA202000805, dated September 15, 2020
NCS-2020-092, Qualification of Matthew Nash as an NCS Engineer, dated September 11, 2020
NCS-PA-37-00004, Nuclear Criticality Safety Process Analysis of Higher Tier Vertical Dry Operations, Rev. 0

NCS-TR-00007, Validation Report for SCALE 6.1, Rev. 4
NCS-TR-00029, Criticality Experiments Report for IEU-COMP-THERM-016: Single Cores of 30.14% ^{235}U Enriched UO_2/Was Mixtures – with Composite Reflectors, Rev. 0
NCS-TR-0050, Nuclear Criticality Safety Technical Reference for Higher Tier Vertical Dry Operations, Rev. 0
NCSE-02, Nuclear Criticality Safety Analyses and Quality Assurance Reviews, Rev. 47

Procedures/Instructions
E46-80, Processing Containers in the Drum Count/SGS Area, Rev. 49
OP-0061234, Operating Procedure for Maintenance in UPRR, Rev. 56
OP-0061242, Operating Procedure for In-Line Monitor System, Rev. 33
OP-1000309, Operating Procedure for NDA Measurement of Waste and Scrap, Rev. 14
OP-1001040, Operating Procedure for RTRT Scrap and Waste Handling Procedure, Rev. 12
QWI 4.1.5, Design Criteria for NRC Licensed Activities, Rev. 23
QWI 9.1.7, Preventative/Predictive Maintenance and Safety-Related Controls Testing Program, Rev. 1
QWI 14.1.4, Reporting Unusual Incidents, Rev. 12

Work Orders
20187645, Troubleshoot Rec Equipment
20289806, SC PRI Cond Tk In-Line #2 Alarm 1M Reco
20291780, SC PRI Cond Tk In-Line #2 Alarm 1M Reco
20292458, Checklist for UPRR Maintenance Work Order Assessment
20292683, SC Emer Gen No Load GEN0131W Elec
20292824, Replace Three-Way Valve
20292831, Replace Chassis PRI Extraction PLC

Other Documents
2nd Quarter 2020 NCS Violation & Observation Summary dated August 8, 2020
3rd Quarter 2020 NCS Audit dated September 1, 2020
Email from T. Lotz dated September 29, 2020
MP-3168, Primary Condensate Tank In-Line Monitor #2 Alarm Test
Posting 15-20-008, Drum Count Area Floor Storage, Rev. 2
Posting 15-21-002, ≥ 55-Gallon Drum Storage Areas, Rev. 4
SAR Table 15.12.4.1.1
SAR Appendix A, Node 12 Annular Tanks, dated June 9, 2020

RADIOLOGICAL CONTROLS

88135.02 – Radiation Protection Quarterly

Drawing
UPRR-10059, WS-300 Gas Cabinet, Rev. 01

Procedures
RP-05, Respiratory Protection, Rev. 15
RP-05-001, Respirator Issuance, Rev. 21
RP-06, Radiation Work Permit, Rev. 14

88030 – Radiation Protection

Procedures

A62-04, NRC, OSHA, State, and Federal Posting Procedure, Rev. 22
RP-02-001, Contamination Control Procedure, Rev. 15
RP-02-012, Guidelines for Handling Radiation Protection Radioactive Waste, Rev. 06
RP-06-001, Radiation Protection Responsibilities of a Radiation Work Permit, Rev. 14
RP-07-004, Calibration of Air Sampling Flow Meters, Rev. 10
RP-09-002, Waste Shipment Surveys, Rev. 12
RP-13-004, Radiation Safety Incident Notice, Rev. 15
RP-14-001, Area Radiation Postings, Rev. 10
RP-14-002, Radioactive Material Postings for Containers, Equipment, and Systems, Rev. 07

Radiation Work Permit

RWP 20-0040, General Down Blend Phase 2 Demolition, Rev. 00
- Work Package Z01-001, Relocated Drum Storage Area in Zone 01 to Zone 04, R001
- Work Package Z01-002, Remove Zone 01/02 Wall and Zone 01/04 Wall, R001
- Work Package Z03-001, Remove Zone 03 Electrical Cabinets, R001
- Work Package Z04-001, Drum Unloading Station, R001
- Work Package Z04-002, Remove Zone 04 Wall, R001

Other Documents

2019 ALARA Report, May 2020
August to October 2020 Monthly Agenda ALARA Meetings, August 20, September 15, and October 8, 2020
Contamination Survey Results dated November 17, 2020
Form A62-04-01 dated March 9, June 8, and September 7, 2020
Internal Exposure Report (BZ data only), January 1 to November 10, 2020
RP-03-010, Form 2, External Radiation Survey Form, Rev. 10, dated January 1, 2018
RP-13-002, Form 1, Technician's Daily Inspection Report, Rev. 13, Filler and Recovery dated November 18, 2020
Radiation Safety Incident Notice (RSIN) – Personnel Contamination Report for October 2020, dated November 10, 2020
RSIN, 20-0059, Elevated Daily Smear @ Arc Furnace, RTR

88035 – Radioactive Waste Processing Handling, Storage, and Transportation

Procedures/Instructions

E41-25, Operating Instructions for the Drum Counter, Rev. 40
E46-80, Processing Containers in the Drum Count/SGS Area, Rev. 49
EP-722, Waste Preparation Area, Rev. 7
EP-723, Mixed Waste Storage Area, Rev. 5
OP-102727, Low-Level Rad Waste Loaders Training/Testing (U), Rev. 6
RMS-01, Identification & Communication Requirements for Shipment of Radioactive Material, Rev. 9
RMS-02, Package Selection and Use for Shipment of Radioactive Material, Rev. 15
RMS-21, Classification, Characterization, Packaging, and Preparation of Low-Level Radioactive Waste and Mixed Waste, Rev. 23
RMS-22, LSA Shipments, Rev. 10
RMS-23, Low-Level Radioactive Waste Administrative Procedure, Rev. 11
QWI 15.1.15, Shipment of Radioactive Materials, Rev.11

Other Documents
10 CFR 61 Analysis Report dated September 22, 2020
E4-1024, SNM Shipment/Receipt Documentation, Rev. 4
Internal Audit Summary Report, Radiological Waste & Transportation, dated October 20, 2019
Nuclear Materials Control Organizational Chart dated September 22, 2020
Uniform Low-Level Radioactive Waste Manifest, Form 540 & 540A (Shipping Paper) and Form 541 (Container and Waste Description)
ZBFH-VDM-1309, Waste Drum Activity Levels

88045 – Effluent Control and Environmental Protection

Corrective Action Program Records

2019-0321	2019-1116	2020-0808	2020-1221

Procedures
EP-301, LLR Sludge Processing System, Rev. 21
EP-320, Overall Dynamic U235 Inventory System, Rev. 18
EP-321, Sampling, Analysis, Reporting, and Release of Retention Tanks for Dynamic U235 Inventory, Rev. 25
RP-07-079, Calibration and Operation of the Canberra In-Line Liquid Waste Monitors, Rev. 08
RP-08-001, Collection and Analysis of Environmental Soil, Surface Water, Sediment, Vegetation, and Fallout Samples, Rev. 19

Other Documents
2019 ALARA Report Table 13, Final Liquid Effluent Summary for 2015-2019
2019 ALARA Report Table 14, Boundary Air Sampling Data for 2015-2019
2020 Elevated Environmental Vegetation Sample #4 Evaluation
2020 Final Liquid Effluent Data
Environmental Well Water Data, Action Level Tracking
Gaseous Effluents (Continuously Sampled Stacks), Reporting Period 12/30/19 – 06/28/20
Out of Calibration Report for RP3001 In-Line Monitor System
RP-07-79, Form 1, In-Line Monitor Calibration Record for Detector RP3001, dated August 4, 2020
RP-07-79, Form 1, In-Line Monitor Calibration Record for Detector RP3003, dated August 4, 2020
RP-08-001, Form 1, Rev. 20, 1st Quarter 2020 Environmental Sample Results
RP-08-001, Form 1, Rev. 20, 2nd Quarter 2020 Environmental Sample Results
RP-08-001, Form 1, Rev. 20, 3rd Quarter 2020 Environmental Sample Results
RP-08-007, Form 2, Secondary Effluent Release Point Sample Analysis Results, Rev. 13, Sample Period Calendar Year 20
RP-08-022, Form 2, Well Water Sample Analysis Data, Rev 13, Sample Period 05/30/19 to 09/07/20

FACILITY SUPPORT

88070– Plant Modifications

Corrective Action Program Records
2019-1253, SWO N350s
2019-1254, SWO Details in Comments
2020-0055, Incorporate SER Changes into SAR
2020-0115, Water/Wastewater Connections

Nuclear Criticality Safety Records
NCS-2018-077, NCS Safety Analysis to add a New Filter to the Sectioning Facility Behringer Saw, dated August 6, 2018
NCS-PR-23-00001, Rev. 01A, dated July 26, 2018

Procedures/Instructions
QWI 2.1.2, Preparation and Maintenance of Safety Analysis Reports, Rev. 18
QWI 5.1.7, Safety Evaluation Requests, Rev. 36
QWI 5.1.12, Change Management, Rev. 34
QWI 5.1.12, ATT 01, Risk Definition, Rev. 18
QWI 5.1.12, ATT 03, Technical Review Board Definition, Rev. 3
QWI 5.1.12, ATT 04, Change Document Help Information, Rev. 3
QWI 5.1.12, ATT 05, Flow Diagram of Change Request Routing, Rev. 7
QWI 5.1.12, ATT 08, Guidelines for Training Plans, Rev. 3
QWI 5.1.12, ATT 09, Review Meeting Guidelines, Rev. 2
QWI 5.1.12, ATT 10, Subject Matter Expert Expectations, Rev. 2
QWI 9.1.7, Preventive/Predictive Maintenance and Safety Related Controls Testing Program, Rev. 11
QWI 14.1.1, Preventive/Corrective Action System, Rev. 41

Other Documents
Change Maintenance Order 20288067, Central Header
Change Package 4740, Cutting Fluid Recirc System
Change Package 5645, LEU Silicide Powder Glovebox
Change Package 7745, Trailer Installation
Change Package 7760, Replace Coolant Drain Manifolds on WS 145 and WS 300
Change Package 8074, Changes to SAR 15.18 Per Action Items 04757 and 04774
Change Package 8281, Trailer Installation
Change Package 8929, Change Flow Switches on WS 14 and WS 300 Coolant System
EtQ Reliance Training Presentation, dated October 21, 2020
Form N-350, Industrial Engineering Work Request, Rev. 10
Internal Audit Summary Report SAR 15.20, dated February 2020
MP- 2257, LEU Silicide Powder Glovebox
NRC Compliance Internal Audit Summary Report dated February 2020
SER-11-026, Manufacturing of RTR Box Type Elements
SER-19-006, Phase 01, Removal of Temp Updates to SAR 15.44
SER Review dated October 12, 2020
Summary Report of Changes, dated January 23, 2020
Training Plan for Recovery Maintenance, dated November 16, 2017
Uranium Processing & Research Reactors On-the-Job Training-Engineering/Technicians

88135.17 – Permanent Plant Modifications

Drawings
UPRR-20138, U-Moly - HIP Can, Rev. 1
UPRR-20141, U-Moly - HIP Can, Rev. 1

Other Documents
CHG-000074198, Revise OP-10461131 and Drawings UPRR-20138 and UPRR-20141, approved December 11, 2019
CHG-00008094, Changes to SAR15.44 and Appendix per SER 19-027 Phase 1, approved March 26, 2020
Posting 15-44-008, UMo HIP Can Assembly Workstation, Rev. 0

88135.19 – Post-Maintenance Testing

Corrective Action Written as a Result of Inspection Activities
2020-1545, Functional Test of In-Line Monitors Not Performed Following Maintenance, Incident date 10/22/2020, Report date 12/12/2020
COM-85699, Revise MP-3032 to Visually Inspect Check Valve Upon Removal

Drawings
UPRR 30046, Bay14A Steam Condensate P&ID, Rev. 7
UPRR-30147, In-Line Monitors 1, 2, and 3 P&ID, Rev. 1

Procedures/Instructions
MP-3168, Primary Condensate Tank In-Line # 2 Alarm Monthly Test
OP-0061234, Operating Procedure for Maintenance in UPRR, Rev. 56
OP-0061242, Operating Procedure for Inline Monitor System, Rev. 33
QWI 9.1.7, Preventive/Predictive Maintenance and Safety Related Controls Testing Program, Rev. 11

Work Order
20284337, Primary Condensate Tank Inline No. 2 Alarm Monthly Test, completed on July 29, 2020
20286434, SC Rep DD Check Valves B 1Y URPSM, completed on June 7, 2020
20289806, Primary Condensate Tank Inline No. 2 Alarm Monthly Test, completed on August 26, 2020
20292458, Uranium Recovery Condensate Tank Pump Three-way Valve Troubleshooting, completed on October 16, 2020
20292824, Uranium Recovery Condensate Tank Pump Three-way Valve Replacement, completed October 22, 2020
20292831, Uranium Recovery Primary Extraction PLC Chassis Replacement, completed on October 22, 2020

Other Documents
M35-037, SFF Checklist, Rev. 61
SAR 15.09, Main Extraction and Drum Dryer Processes in Uranium Recovery, Rev. 105
SAR 15.12, Liquid and Solid Waste Handling in Uranium Recovery, Rev. 83

88135.22 – Surveillance Testing

Work Order
20277645, SC Test Evap #3 Pressure Relief Valve 1Y, completed March 16, 2020
20278905, SC Test Evap #2 Pressure Relief Valve 1Y, completed March 16, 2020
20278987, SC Test Evap #1 Pressure Relief Valve 1Y, completed March 16, 2020
20278988, SC Test Evap #4 Pressure Relief Valve 1Y, completed March 16, 2020
20278989, SC Test Evap #5 Pressure Relief Valve 1Y, completed March 16, 2020
20278990, SC Test Evap #6 Pressure Relief Valve 1Y, completed March 16, 2020

Drawings
UPRR 30046, Steam Condensate P&ID, Rev. 7

Other Documents
ES-1045-1, Apollo Valves 19 Series-Safety Valve - Installation, Operation, and Maintenance - Part I, dated September 19, 2005
SAR 15.09. Main Extraction and Drum Dryer Process in Uranium Recovery, Rev. 104