



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

January 25, 2022

Mr. James J. Bittner  
Vice President and General Manager  
BWXT Nuclear Operations Group, Inc.  
P.O. Box 785  
Lynchburg, VA 24505-0785

SUBJECT: BWXT NUCLEAR OPERATIONS GROUP, INC. - LYNCHBURG –  
INTEGRATED INSPECTION REPORT 07000027/2021004

Dear Mr. Bittner:

On December 31, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at BWXT Nuclear Operations Group, Inc. - Lynchburg. On January 25, 2022, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

No violations of more than minor significance were identified during this inspection.

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,

*/RA/*

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

Docket No. 07000027  
License No. SNM-42

Enclosure:  
As stated

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SUBJECT: BWXT NUCLEAR OPERATIONS GROUP, INC. - LYNCHBURG –  
 INTEGRATED INSPECTION REPORT 07000027/2021004 –  
 Dated January 25, 2022

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

Docket Number: 07000027

License Number: SNM-42

Report Number: 07000027/2021004

Enterprise Identifier: I-2021-004-0035

Licensee: BWXT Nuclear Operations Group, Inc.

Facility: BWXT Nuclear Operations Group, Inc. - Lynchburg

Location: Lynchburg, VA

Inspection Dates: October 1, 2021 to December 31, 2021

Inspectors: A. Alen, Senior Resident Inspector  
G. Goff, Fuel Facility Inspector  
M. Ruffin, Fuel Facility Inspector  
T. Sippel, Fuel Facility Inspector  
P. Startz, Fuel Facility Inspector

Approved By: Eric C. Michel, Chief  
Projects Branch 2  
Division of Fuel Facility Inspection

Enclosure

## **SUMMARY**

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at BWXT Nuclear Operations Group, Inc. - Lynchburg, in accordance with the fuel cycle facility inspection program. This is the NRC's program for overseeing the safe operation of licensed fuel cycle facilities. Refer to <https://www.nrc.gov/materials/fuel-cycle-fac.html> for more information.

### **List of Violations**

No violations of more than minor significance were identified.

### **Additional Tracking Items**

None.

## PLANT STATUS

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

## 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>. Inspections were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2600, "Fuel Cycle Facility Operational Safety and Safeguards Inspection Program." 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.

## SAFETY OPERATIONS

### 88020 - Operational Safety

The inspectors evaluated selected aspects of the licensee's operational safety program to verify compliance with selected portions of Title 10 of the *Code of Federal Regulations* (10 CFR) 70, "Domestic Licensing of Special Nuclear Material," including 70.61, 70.62; Chapter 11, "Management Measures," of the facility's license application; and applicable licensee procedures.

### Identification of Safety Controls and Related Programs (IP Section 02.01)

The inspectors selected specific process areas for inspection based on the safety basis information of the facility, the risk/safety significance of the process areas, the description of plant changes submitted to the NRC, and past plant performance documentation. For the process areas of interest, the inspectors selected a sample of accident sequences in nuclear criticality safety (NCS), radiation safety, fire safety, and/or chemical safety based on the information provided in the integrated safety analysis (ISA) summary. The inspectors conducted a general plant tour of each major plant operating area. The process areas selected for review are listed below:

- low-level dissolution (LLD) process
- recovery furnace system
- the inspectors also observed other ongoing processing and maintenance activities in UR

### Review of Safety Controls and Related Programs (IP Section 02.02)

The inspectors reviewed information related to administrative, active engineered, and passive safety controls or items relied on for safety (IROFS) for the areas selected above, including the identification of the licensee's assumptions and bounding cases as they apply to each of the selected accident sequences, safety controls, or IROFS. This review was

performed to verify that the controls or IROFS were available and reliable to perform their intended safety functions and that the design basis assumptions were reflected in the actual conditions in the field. The specific safety controls selected for review are listed below:

- liquid detectors on double walled pipes, an active engineered control for chemical safety in UR
- drip shields above gloveboxes, a passive control to prevent the introduction of moderator into glovebox for criticality safety
- mass/moderator tracking and logs, an administrative control for criticality safety in the recovery furnace system
- geometry controls on the recovery furnace system, passive controls for criticality safety
- drains on recovery furnace system gloveboxes, a passive control for criticality safety
- mass tracking logs, an administrative control for criticality safety in the LLD system
- geometry controls of equipment used in the LLD system, passive controls for criticality safety
- limited use of moderating materials around the LLD hood, an administrative control for criticality safety

#### Implementation of Safety Controls (IP Section 02.03)

For the selected safety controls listed above, the inspectors reviewed management measures to verify proper implementation in accordance with 10 CFR 70 and applicable sections of the license application. This review was performed to verify that selected safety controls or IROFS were present, available, and reliable to perform their safety function and that the design basis assumptions were reflected in the actual conditions in the field. The inspectors conducted the following activities to verify the implementation of selected safety controls:

- walked down various passive engineered IROFS features identified in drawing UPRR 30129 to verify implementation of IROFS for the UR furnace system
- reviewed operating procedures (e.g., OP-0061450, OP-0061556) and interviewed operators for IROFS applied to the recovery furnace system
- reviewed NCS postings 15-25-002 and 15-25-003 for administrative IROFS applied to the recovery furnace system
- observed operators performing the mass/moderator measurements, calculations and logs when adding or removing material from gloveboxes
- walked down the LLD system to verify the as-built state of the IROFS matched system drawing UPRR 30060
- reviewed LLD system operating procedures and interviewed and observed system operator's implementation of administrative IROFS
- observed operators perform mass calculations for each batch of material being processed in the LLD system

#### Safety Control Support Programs (IP Section 02.04)

The inspectors assessed additional management measures that support the availability and reliability of the selected safety controls to verify these were implemented in accordance with

10 CFR 70 and applicable sections of the license application. Specifically, the inspectors conducted the following:

- reviewed maintenance plans (MPs) and work orders (WOs) for IROFS in the areas above
- reviewed corrective action program (CAP) entries and documents related to operational issues and IROFS performance
- reviewed IA-SAR-2021-02-01, "Internal Audit Summary Report," which summarized licensee audit activities required by license application Section 11.5.1.5, "Quality Assurance Audits"
- reviewed training documents (e.g., TP-REC-0011 and Container Control/FAS Training Script - 2021) and interviewed operators assigned to the recovery furnace system
- observed activities related to operations in the recovery furnace system and LLD
- reviewed training records of the operators of the LLD system
- reviewed recent modification packages of changes made to the LLD system

#### 88135.02 - Plant Status

The inspectors routinely conducted walkdowns of licensee areas, observed operators, material control and accounting and security force personnel, inspected postings and licensee guidance documents, interviewed plant personnel, and discussed the results of operational and shift turnover meetings to gain insight into the status of facility activities, risk-inform the selection and implementation of the appropriate core inspection procedures, and ensure compliance with license and regulatory requirements.

#### Plant Tours (IP Section 03.01)

The inspectors performed weekly tours of plant operating areas housing special nuclear material (SNM) to verify that licensed activities were conducted safely and in compliance with the license and 10 CFR 70, "Domestic Licensing of Special Nuclear Material."

#### Status Meetings (IP Section 03.02)

The inspectors, on a routine basis, attended and reviewed the results of scheduled licensee meetings to determine plant status and awareness of site activities so that inspection resources were appropriately focused on those activities with the higher safety significance.

#### Record and Log Reviews (IP Section 03.03)

The inspectors reviewed selected records and logs to assure they were developed, maintained, and reported as required by applicable license and regulatory requirements.

#### Posting of Notices (IP Section 03.04)

The inspectors reviewed the following notices to determine if they were posted in accordance with 10 CFR 19.11:

- postings relevant to 19.11(a)(1) - (3) and 19.11(e) (i.e., NRC Form 3) located in the protected area and waste treatment facility

#### Identification and Resolution of Problems (IP Section 03.05)

The inspectors reviewed the selected issues below to determine if the licensee was entering equipment, human performance, and other performance issues in a formalized program to identify, track and assure correction of safety and safeguard significant problems in accordance with 10 CFR 70.62(a)(3) and applicable license requirements:

- corrective action (CA) 2021-1266, UR furnace (WS-401) operations blender unexpectedly started while being loaded with SNM on August 27, 2021, report date November 16, 2021
- CA 2021-1440, RTR compact SNM content out of specification on October 1, 2021, report date October 21, 2021
- CA 2021-1643, elevated U-235 concentration in UR raffinate waste tanks due to uranyl nitrate solution overflow from evaporator no. 1 on November 22, 2021, report date December 29, 2021

#### Event Review (IP Section 03.06)

The inspectors reviewed the plant events listed below to determine if the event warranted the use of formal event review criteria and to evaluate the licensee's response was in accordance with 10 CFR Parts 40.60 (source material), 70.50 (mainly radiological events), 70.52 (criticality and safeguards events), 71.95 (transportation events), 73.71 (safeguards events) and 20.2201, 20.2202, and 20.2203 (radiological and environmental events):

- loose hardware identified on shipping container on October 11, 2021 (CA 2021-1490)
- specialty fuel facility (SFF) TRISO furnace (WS-300) did not initiate systematic shutdown during interlock test of facility alarm system (FAS) detector A3-LEL-T-01 (IROFS) on November 2, 2021 (CA 2021-1555)
- encapsulated fuel components cut in non-fuel workstation on November 4, 2021 (CA 2021-1568)
- elevated U-235 concentration in UR raffinate waste tanks on November 22, 2021 (CA 2021-1643)

#### Audits (IP Section 03.07)

The inspectors reviewed the internal and/or external audits listed below to determine whether they have been performed in accordance with 10 CFR 70.22(h)(1) and the license application:

- External Audit: Nuclear Criticality Safety Program - Triennial Independent Assessment dated October 2020



- External Audit: Nuclear Safety Culture Assessment of BWX Technologies Nuclear Operations Group dated June 27, 2021
- Semi-Annual Effluent Monitoring Report dated August 24, 2021

Radiation Work Permit (RWP) (IP Section 03.09)

The inspectors reviewed and observed the RWPs listed below to determine whether the RWP contains the information required by Chapter 4, "Radiation Safety;" of the license application, the Radiation Protection Manual; and implementing procedures:

- RWP 21-0055, "Clean Bay 12A 'Do All' Saw," Rev. 0, conducted November 16, 2021
- RWP 21-0013, "Loading and Transporting Down-Blend Decontamination and Decommissioning Waste Drums in Bays 14A and 15A (Task 3)," Rev. 0, conducted November 17, 2021

Annual Security and Emergency Preparedness Drills/Exercises (IP Section 03.10)

The inspectors observed the licensee's performance during the actual emergency preparedness response and security force-on-force tactical response exercise listed below to determine they were being implemented in accordance with 10 CFR 70.22(l)(3) and/or 10 CFR 73.46(b)(9):

- Force-on-force tactical response exercise conducted on October 20, 2021.
- On November 4, 2021, BWXT activated their Emergency Operations Center after identifying an incident where encapsulated fuel components were inadvertently cut in a non-fuel cutting operation (CA 2021-1568). The inspectors evaluated the emergency management organization command and control, communications, accident assessment (i.e., radiological, criticality safety, and transportation), and event classification.

88135.04 - Resident Inspection Program Operational Safety

The inspectors evaluated whether the material condition and as-found configuration of selected site structures, systems, and components, documentation, personnel, and IROFS to verify compliance with 10 CFR 70, the license, the safety analysis report (SAR) and/or license application, and licensee policies and procedures; and determine whether they are appropriate, available, and reliable to protect worker and public safety during normal, off-normal, and accident conditions.

Operations Safety Walkdown (IP Section 03.01)

The inspectors evaluated the operational safety of the systems and sub-systems of the listed processes associated with the following operation areas:

- SAR 15.34, "Conventional Fuel Operations," Rev. 72.
- automated storage unit (AFSU)
  - chest carts
  - storage chests
  - conventional glovebox lines 7 and 8

- evacuation system (PSES)
  - residue glovebox
- SAR 15.42, "Container Storage Facility," Rev. 10.
- container storage facility rack
  - shipping containers

#### 88135.05 - Resident Inspection Program Fire Protection (Annual/Quarterly)

The inspectors evaluated the operational status and material condition of fire protection systems, structures, and components (SSCs) to verify compliance with the fire protection program as described in Chapter 7, "Fire Safety," of the license application, and the National Fire Protection Association (NFPA) 80, "Standard for Fire Protection for Facilities Handling Radioactive Materials," as required.

#### Fire Area Walkdown (IP Section 03.01)

The inspectors walked down and evaluated the five fire areas listed below:

- main bays 6, 7, 8, 9, and 10

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

The inspectors evaluated the fire brigade training/drill performance described below:

- On October 9, 2021, 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 observed both classroom and practical (i.e., hands-on) training sessions involving use of self-contained breathing apparatus (SCBA), forcible entry tools (e.g., halligan bar and flat-head axe), and search/rescue operations using a FAST (firefighter assistance search team) Board. The inspectors also observed a live-fire drill evolution in the 'burn' building. The drill evaluated fire brigade member application of the job performance requirements covered during the classroom/practical training sessions. The inspectors observed fire brigade leader command and control, proper donning and use of turnout gear and SCBA, availability of firefighting equipment, clear and effective radio communications, and implementation of pre-planned strategies.

#### 88135.17 - Permanent Plant Modifications

The inspectors evaluated implementation of the configuration management system for facility changes or modifications to ensure that safety-related systems, structures, and components (i.e., IROFS or other credited safety controls) could adequately perform their intended safety function and that changes did not adversely impact the operability and safety of the facility.

#### 88135.19 - Post Maintenance Testing

The inspectors evaluated post-maintenance test activities to verify compliance with license application Chapter 11, "Management Measures," and test procedures and/or WO instructions to confirm functional capability of the IROFS and/or safety controls following maintenance.

### Post-Maintenance Testing (IP Section 03.01)

The inspectors reviewed the two post-maintenance tests listed below. Tests were either observed directly or test results were reviewed.

- WO 20313324, UPRR high-level dissolvers p-trap leak and obstruction inspection following p-trap piping changes per change evaluation CHG-8332; inspection conducted on November 13, 2021
- OP-1001828, interlock test for FAS detector A6-ACPR-T-02 following troubleshooting maintenance (WO 20314587); test conducted on November 15, 2021

### 88135.22 - Surveillance Testing

The inspectors evaluated IROFS and safety controls that required periodic surveillance and/or calibration tests to ensure they were available and reliable to perform their function when needed, to comply with license application Chapter 11, "Management Measures," and the performance requirements of 10 CFR 70.61 and 70.62, and to maintain their operational readiness consistent with the ISA.

### Surveillance and Calibration Testing (IP Section 03.01)

The inspectors reviewed the two surveillance and/or calibration tests listed below. Tests were either observed directly or test results were reviewed.

- OP-1001828, "FAS Interlocks and Furnace Testing in SFF - Finishing Furnace WS-300 (procedure Section H)," conducted October 20 and November 2, 2021
- MP-4181 (WO 20313307), "Recovery Columns Process Water Valves Leak Test (Annual)," conducted November 29, 2021

## **RADIOLOGICAL CONTROLS**

### 88030 - Radiation Protection

The inspectors evaluated selected aspects of the licensee's radiation protection program to verify compliance with selected portions of 10 CFR 20 and 61; Chapter 4, "Radiation Safety," of the facility's license application; and applicable licensee procedures.

### Radiation Protection Program Implementation (IP Section 02.01)

The inspectors reviewed licensee procedures and other documentation related to the implementation of the radiation protection and radioactive waste programs to verify compliance with 10 CFR 20.1101(a). Specifically, the inspectors reviewed the following documents or observed the following:

- RPTWR 2021-034, "iLink to Sentinel Interface Application, Area RP-07," August 24, 2021 (custom application created to connect seven iMatic counters to the Sentinel database)

- Radiation Protection Manual
- the radiation protection department's independence from operations during walkdowns of UR, filler, SFF, down blend, waste treatment facility, Lynchburg Technology Center (LTC), and the radiological waste area

#### Radiation Protection Program Review (IP Section 02.02)

The inspectors reviewed the licensee's as low as reasonably achievable (ALARA) reports and audit/self-assessment records to verify compliance with 10 CFR 20.1101(c) and 20.2102. Specifically, the inspectors reviewed the following:

- 2020 ALARA Report, May 2021
- December 2020 to October 2021 ALARA meeting minutes
- BWXT/NFS Waste Vendor Audit - Energy Solutions, Clive Site dated November 5, 2021
- Section 4.1 of the license application
- radiation protection/health physics quarterly audits:
  - 4th Quarter 2020
  - 1st, 2nd, and 3rd Quarter 2021
- corrective actions:
  - 2019-0770
  - 2020-0291
  - 2020-0772
  - 2021-0532
  - 2021-1358

#### Radiation Protection and Radioactive Waste Procedures (IP Section 02.03)

The inspectors assessed the licensee's procedure review requirements to verify compliance with Chapter 4.1, "Administrative Philosophy," of the license application. Specifically, the inspectors completed the following:

- Reviewed the document review tracking system to verify the following procedures were reviewed at the required 5-year frequency:
  - RP-03-010, "Plant Wide External Radiation Surveys," Rev. 9
  - RP-05-011, "Respiratory Protection Selection & ALARA Evaluations," Rev. 6
  - RP-07-004, "Calibration of Air Sampling Flow Meters," Rev. 10
  - RP-08-022, "Environmental Air Sample Collection & Analysis," Rev. 14
  - RP-15-003, "Handling Radioactive Sources," Rev. 4

#### Training (IP Section 02.04)

The inspectors interviewed licensee staff and reviewed radiation protection-related training records to verify compliance with 10 CFR 19.12, 19.13, and Section 4.2, "Training," of the license application. Specifically, the inspectors performed the following:

- reviewed electronic training records for four new radiation protection employees (RP-10-001, Form 1, dated May 22, 23, and June 12, 13, 2021)
- interviewed the radiation technician supervisor

### Radiation Work Permits (IP Section 02.06)

The inspectors interviewed licensee staff and reviewed RWPs to verify compliance with RP-06, "Radiation Work Permit," Rev. 14; Section 4.1 of the license application; and the corresponding section of the Radiation Protection Manual. Specifically, the inspectors reviewed and observed the following:

- RWP 21-0006, "Equipment Removal in Down Blend"
- RWP 21-0007, "Equipment Removal in Zones 5 & 6 in 14A"
- RWP 21-0048, "Package Non-Fissile Excepted Bottles in 55-Gallon Drums for Future Disposition in TP Solids"
- RWP 21-0060, "WS-145 Temporary Operation"
- LTC-21-19, "Health Physics and Radiological Surveillance in High Radiation Areas"
- LTC-21-22, "Routine Entries into Building J and Building J Annex"
- RWPs were available at the location of the specialized work as per procedure

### Instrument Calibration (IP Section 02.07)

The inspectors interviewed licensee staff and reviewed radiation protection instrument calibration records to verify compliance with 10 CFR 20.1501(c), 10 CFR 70.24(a), and Section 4.3.2, "Instrumentation," of the license application. Specifically, the inspectors:

- reviewed RP-07-057, "General Procedure for Calibration and Control of Radiation Protection Instrument," Rev. 24
- reviewed numerous calibrations records: three each for alpha, beta, and gamma detection; one for neutron detection; hand and foot contamination monitors; personnel contamination monitors; air filter analyzers; lapel air samplers; fixed air flow meters; and the criticality accident alarm system
- reviewed the radiation control information system, the computerized system used for identifying instruments coming due for calibration
- observed calibration stickers on several contamination survey meters in intermediate control areas

### Instruments and Equipment (IP Section 02.08)

The inspectors observed the licensee's use of radiation detecting instruments and equipment to verify compliance with 10 CFR 20.1501(a), 70.24(b), and Section 5.1.5, "Nuclear Criticality Monitoring System," of the license application. Specifically, the inspectors observed implementation of the following equipment/instruments:

- criticality accident alarm system
- alpha, beta, and gamma survey meters
- Tennelec and iMatic alpha/beta proportional counters (used for air filters)
- personnel and hand & foot contamination monitors

### Posting (IP Section 02.09)

The inspectors observed the posting of radiation areas and radioactive material storage areas to verify compliance with 10 CFR 20.1902(a)(b) & (d) and Section 4.3.6, "Caution Signs and Labels," of the license application. Specifically, the inspectors observed postings in the following areas:

- radiation area postings in UR, filler, waste treatment facility, radiological waste storage, and along the fence line
- very high radiation area postings at LTC

### Container Labeling (IP Section 02.10)

The inspectors observed the labeling of packages and containers that contain radioactive material to verify compliance with 10 CFR 20.1902(e), 20.1904, 20.1905 and applicable sections of the license application, including Section 4.3.6. Specifically, the inspectors observed labeling in the following areas:

- UR, filler, waste treatment facility, radiological waste storage, and other areas

### Posting of Notices (IP Section 02.11)

The inspectors observed the posting of notices to verify compliance with 10 CFR 19.11. Specifically, the inspectors observed the following notice:

- NRC Form 3, "Notice to Employees," located at the main security building and LTC entry

### Access Control (IP Section 02.12)

The inspectors observed the licensee's access control measures to high radiation areas to verify compliance with 10 CFR 20.1601. Specifically, the inspectors observed:

- high radiation area postings at the following two areas of the LTC:
  - storage building behind a locked chain link fence and with locked doors
  - within the LTC basement; also, behind a locked interior chain link fence and locked door

### Radiation Surveys (IP Section 02.14)

The inspectors reviewed records of the licensee's external radiation surveys to verify compliance with 10 CFR 20.1501(a), 20.2103, and Section 4.3.1.2.1, "Protection of Personnel from External Radiation," of the license application. Specifically, the inspectors reviewed:

- records for RP-03-010 (Forms 1 and 2), Plantwide Gamma Surveys for 2020

### Contamination Control (IP Section 02.15)

The inspectors observed a contamination survey and fixed air surveys and reviewed records of the licensee's contamination control program to verify compliance with 10 CFR 20.1501(a), 20.2103, and Section 4.3.1.2.1 of the license application. Specifically, the inspectors:

- observed a contamination survey within the filler area
- observed fixed air sampler filter change-outs in UR
- reviewed recent contamination records

### Sealed Sources (IP Section 02.16)

The inspectors observed the licensee's storage and control of NRC licensed sealed sources and reviewed records of to verify compliance with Section 4.3.3.5, "Sealed Sources," of the license application. Specifically, the inspectors:

- observed control and storage of sealed sources
- reviewed/verified records of sealed source locations and custody
- interviewed the licensee person in charge of the sealed source program

### Occupational Dose Results (IP Section 02.17)

The inspectors reviewed records of the occupational doses assigned to workers to verify compliance with 10 CFR 20.1201, 20.1207, and Section 4.3.1, "Protection of Personnel from Radiation Exposure," of the license application. Specifically, the inspectors:

- reviewed the dose records for several licensee employees

### Exposure Controls (IP Section 02.18)

The inspectors observed engineering controls used to keep doses ALARA by monitoring the concentration of radioactive material in air, limiting intake, and establishing the ventilation such that air flows from areas of lower contamination potential into areas of higher contamination potential to verify compliance with 10 CFR 20.1701 and Sections 4.3.1.1.3, 4.3.5.1.6, and 4.3.5.2.5 of the license application. Specifically, the inspectors:

- observed the air flow of gloveboxes and vapor hoods
- observed that ventilation inside SNM buildings was maintained such that air flows were from areas of lower contamination potential into areas of higher contamination potential
- observed the implementation of fixed air monitors and personnel lapel air samplers

### Bioassay Program (IP Section 02.19)

The inspectors interviewed licensee staff and reviewed the bioassay program to verify compliance with 10 CFR 20.2103(b)(3) and applicable sections of the license application. Specifically, the inspectors:

- reviewed bioassay records for employees required to participate in the bioassay program
- interviewed the licensee about quality assurance of the vendor used for processing the licensee's bioassay samples; noted that the licensee audits the vendor

#### Dosimetry (IP Section 02.21)

The inspectors interviewed licensee staff, observed dosimetry being worn, and reviewed dosimetry records to verify compliance with 10 CFR 20.1501(d), 20.1502(a), and Sections 4.3.1.2.1 and 4.3.2 of the license application. Specifically, the inspectors:

- interviewed the senior health physicist responsible for administering the dosimetry program
- verified that the dosimeter processor is accredited by the National Voluntary Laboratory Accreditation Program
- reviewed dosimetry records for multiple licensee workers that handle SNM
- observed workers in UR, filler, waste treatment facility, and LTC wore dosimetry as required

#### Dose Assessment Programmatic Review (IP Section 02.22)

The inspectors interviewed licensee staff and reviewed records and calculations related to the licensee's assessment of the dose to workers to verify compliance with 10 CFR 20.1202, 20.1204, 20.1502(b), and 20.2106, and applicable sections of the license application (Section 4.3, "General Radiation Protection"). Specifically, the inspectors:

- interviewed the licensee personnel responsible for dose assessment
- reviewed external dose, internal dose, and total dose records for several licensee workers with focus on the most at-risk employees

#### As Low As Reasonably Achievable (ALARA) (IP Section 02.23)

The inspectors interviewed licensee staff and reviewed records related to the implementation of the ALARA program to verify compliance with 10 CFR 20.1101(b) and applicable sections of the license application (Section 4.1). Specifically, the inspectors:

- reviewed the 2020 ALARA report
- reviewed the ALARA meeting minutes for the last 12 months
- interviewed the radiation protection unit manager

#### 88045 - Effluent Control and Environmental Protection

The inspectors evaluated selected aspects of the licensee's environmental protection program to verify compliance with selected portions of 10 CFR 20, Part 40, and Part 70, and the facility's license application.



### Program Implementation (IP Section 02.01)

The inspectors reviewed any significant changes to the effluent control and environmental protection program, discussed with the licensee any new unplanned releases or contamination identified, and screened the CAP to verify the environmental protection program was being implemented in compliance with license requirements. Specifically, the inspectors reviewed the following documents and/or discussed the following areas:

- sample results at onsite environmental sample location #4, which included reviewing CA 2020-1221, licensee sample records, and the licensee's evaluation of whether or not this constituted new contamination
- walked down this and other locations where the licensee takes onsite environmental samples

### Audits and Quality Assurance (IP Section 02.03)

The inspectors reviewed procedures associated with the conduct of audits and assessments along with completed third-party and self-assessed audits and resulting corrective action entries assessed with the environmental protection program since the last inspection to verify compliance with license application requirements. Specifically, the inspectors completed the following activities:

- reviewed licensee audits of vendors that analyze environmental samples for the licensee including EA-GEL-2021-06-07 and EA-NMIS-21-04-14
- reviewed the 2020 ALARA report
- reviewed the last three semi-annual effluent reports

### Event Review (IP Section 02.04)

The inspectors reviewed the licensee's evaluation of safety-significant events in the area of environmental protection to verify compliance with 10 CFR 20 and license application requirements. Specifically, the inspectors reviewed the following:

- CA 2020-1221, including the licensee's follow-up surveys and evaluations

### Training (IP Section 02.05)

The inspectors reviewed the licensee's training program in the area of environmental protection to verify compliance with license application requirements. Specifically, the inspectors reviewed the following:

- RP-10-001, "Radiation Control Supervisor and Technician Training," Rev. 15
- discussed training with technicians performing environmental duties

### Radioactive Liquid Effluents (IP Section 02.06)

The inspectors reviewed sample collection and analysis procedures, reviewed radiological effluent monitoring reports and monitoring records, and discussed the radioactive liquid effluent results with licensee staff to verify compliance with aspects of 10 CFR 20.2103 and the license application. Specifically, the inspectors completed the following activities:

- observed sample collection locations
- walked down the onsite environmental laboratory and discussed sample analysis with technicians
- reviewed sample collection records and results
- reviewed and discussed dose calculations and results

#### Radioactive Airborne Effluents (IP Section 02.08)

The inspectors observed operations, reviewed sample collection and analysis procedures, reviewed radiological effluent monitoring reports and monitoring records, and discussed the radioactive airborne effluent results with licensee staff to verify compliance with aspects of 10 CFR 20.1101, 10 CFR 20.2103, and the license application. Specifically, the inspectors completed the following activities:

- observed sample collection from multiple dry stacks and a wet scrubber
- walked down the onsite environmental laboratory and discussed sample analysis with technicians
- reviewed sample collection records and results
- reviewed and discussed dose calculations and results

#### Effluent Monitoring (IP Section 02.09)

The inspectors observed operations, reviewed records, and discussed the results with the licensee to verify compliance with the license application. Specifically, the inspectors completed the following activities:

- discussed potential paths of inadvertent discharge to waste tanks
- reviewed records of monitoring of non-contaminated effluents and systems that ensure such releases do not include radioactive material

#### Semiannual Effluent Reports (IP Section 02.10)

The inspectors reviewed the licensee's effluent monitoring report to verify compliance with the requirements of 10 CFR 70.59. Specifically, the inspectors completed the following activities:

- reviewed inputs to the semi-annual effluent reports and compared results with the 2020 ALARA report

#### Public Dose Analysis (IP Section 02.12)

The inspectors reviewed dose assessment records and associated reports to verify compliance with 10 CFR 20.1301, 10 CFR 20.1302, and the reporting requirements of 10 CFR 20.2107. Specifically, the inspectors completed the following activities:

- reviewed public dose assessment records
- interviewed licensee staff concerning calculations of the public dose

### Environmental Sampling (IP Section 02.13)

The inspectors reviewed environmental sampling records of surface water, sediment, soil, vegetation, ambient air, groundwater, and sewer sludge, to verify compliance with 10 CFR 20.1501 and the license application. Specifically, the inspectors completed the following activities:

- observed and discussed adequacy of sampling points with the licensee
- reviewed records of specific environmental samples
- reviewed evaluations of exceeded action limits

### Minimizing Facility and Environmental Contamination and Facilitating Decommissioning (IP Section 02.14)

The inspectors reviewed decommissioning records to verify compliance with 10 CFR 70.25(g) and 10 CFR 20.1406. Specifically, the inspectors reviewed the following records:

- STEC5\_1013E, "BWXT NOG-L and LTC D and D Oversight Areas," Rev. 5
- STEC9\_1000E, "Contaminated Site Plan," Rev. 10

### Radioactive Waste Classification, Characterization, and Storage (IP Section 02.15)

The inspectors reviewed and observed posting and labeling of storage areas and containers to verify compliance with the requirements of 10 CFR 61.55 and the license application. Specifically, the inspectors reviewed the following:

- discussed the determination of any new waste streams or changes to existing ones with licensee staff
- observed radioactive waste storage areas and labeling or posting of exemption

### Waste Burial (IP Section 02.16)

The inspectors reviewed documentation and records of radioactive waste buried onsite prior to January 1981 to verify compliance with 10 CFR 20.2108, if applicable. Specifically, the inspectors reviewed the following records:

- environmental sampling results (well water and surface samples) related to burial sites
- walked down onsite burial sites where radioactive waste was buried

### Effluent Treatment (IP Section 02.17)

The inspectors conducted walkdowns and observations of onsite waste treatment facilities and airborne effluent scrubbers and filters to verify compliance with the license application. Specifically, the inspectors completed the following activities:

- walked down portions of the waste treatment facility and observed operations
- observed high-efficiency particulate air (HEPA) filters for selected systems
- interviewed licensee staff concerning waste treatment facility operations and

processes to remove radioactive material from wastewater and to monitor concentrations prior to releasing treated wastewater

## **INSPECTION RESULTS**

No violations of more than minor significance were identified.

## **EXIT MEETINGS AND DEBRIEFS**

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

- On January 25, 2022, the inspectors presented the integrated inspection results to James J. Bittner and other members of the licensee staff.
- On November 10, 2021, the inspectors presented the Operational Safety inspection results to Rich Freudenberger and other members of the licensee staff.
- On December 9, 2021, the inspectors presented the Radiation Protection and Effluent Control and Environmental Protection inspection results to Rich Freudenberger and other members of the licensee staff.

## DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
88020	Corrective Action Documents	2021-1358, 2021-1266, 2021-1191, 2021-0975, 2021-0841, 2021-0648, 2021-0635, 2021-0605, 2021-1033, 2021-0626, 2021-0779	Corrective action entries related to operational safety	
		COM-91202		
	Corrective Action Documents Resulting from Inspection	2021-1565		
	Drawings	13AD2_1000	Low-Level Dissolvers Piping & Instrumentation Diagram (P&ID)	Rev. 16
		13AM1_1000	Bay 13A First Floor Exhaust Systems	Rev. 22
		UPRR 30009	13A Weigh Column Assembly	03/16/2010
		UPRR 30060	Low-Level Dissolver Tray	03/09/2011
		UPRR 30129	Recovery Conversion Furnace P&ID	Rev. 1
		UPRR 30160	Low-Level Dissolver System	Rev. 00
		UPRR 30162	13A Storage and Weigh Columns	Rev. 00
	Engineering Changes	CHG-10754	PVC Column Inspection MP Creation and MP 2192 Revision	Rev. 0
		CHG-6843	Create Drawings for Ann Day Tank and Low-Level Dissolver System	08/06/2019
		CHG-7012	Updating OP-0061137 After Removal of Filter Bowls and Piping	09/05/2019
		CHG-9189	Change LLD Tray Design Material Thickness and Remove Thermowell Attachment	09/14/2020
		CHG-9559	Replace Backup Argon Line in SFF	Rev. 0
		CHG-9784	Changes to SAR 15.06 Per Action Item 06211	01/13/2021
	Miscellaneous		Container Control/FAS Training Script - 2021	
		E61-001	Uranium Processing and Research Reactors OJT - Recovery Operations	Rev. 17

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		N/A	Hydrofluoric Acid (HF) Safety Training	10/28/2021
		N/A	New Employee Safety Orientation	10/28/2021
		NCS-2009-127	Nuclear Safety Release for SER 08-045, Phase 1 (Low-Level Dissolver Upgrades)	09/11/2009
		NCS-2010-079	Nuclear Safety Release for SER 08-045, Phase 1 (Low-Level Dissolver Upgrades)	04/09/2010
		QUAL-REC-0001	Recovery Qualification Card	Rev. 1
		SAR 15.25	Furnace Process Recovery Operation	Rev. 38
		SAR Appx. 15.06	Low-Level Dissolution Process in Uranium Recovery	Rev. 29
		SAR Appx. 15.25	Furnace Process Recovery Operation	Rev. 14
		TP-REC-0005	Training Plan for: Low-Level Dissolver (LLD) Area	02/25/2020
		TP-REC-0011	Furnace Area	07/22/2020
	Procedures	E61-001	OJT - Recovery Operators	Rev. 17
		MP 3925	Annual Inspection of WS 401 Glovebox Integrity and to Ensure Glovebox Drains are Unobstructed	
		MP 3926	Yearly Inspection to Confirm Dimensions	
		MP 5147	PVC Column Inspection # 14A Weigh, Evap 6, and Contactor Extraction Area Columns	
		MP 5148	PVC Column Inspection # Contactor Feed, Scrub Feed, Organic Phase Separator Columns	
		NCS Posting 15-25-002	Recovery Furnace System	Rev. 00
		NCS Posting 15-25-003	Recovery Furnace System Cyclone Glovebox	Rev. 2
		OP-0061141	Low-Level Leach Hood Operation	Rev. 66
		OP-0061144	Low-Level Storage Column Operation	Rev. 23
		OP-0061169	Housekeeping and Decontamination in Uranium Recovery Facility	Rev. 14
		OP-0061214	LLD Accountability Weigh Column Operation	Rev. 30
		OP-0061234	Maintenance in UPRR	Rev. 58
		OP-0061450	General Safety and Safeguards Guidelines - UPRR Area	Rev. 39
		OP-0061556	Recovery Conversion Furnace Operation	Rev. 22
		Self-Assessments	Audit Summary	IH&S 3rd Quarter 2021 Audit

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
		Report			
		IA-SAR-2021-02-01	Internal Audit Summary Report	Rev. 0	
	Work Orders		20273976	Maintenance Plan (MP) 1185 SC HLD Weigh Gbox GP Hood Annual Inspection	12/11/2019
			20278998	SC WS 401 Fur Gbox/Drain Insp 1Y Reco	03/23/2021
			20288738	Annual SC Inspection LLD Electrical Junction Boxes	09/03/2020
			20294242	Annual SC HLD Weight GBox GP Hood Inspection	12/11/2020
			20295744	MP 1807: Quarterly SC Nitric Acid Day Tank HL Alarm	01/21/2021
			20295777	MP 2895: Quarterly SC Test Probe LLD HF 2" Column	01/29/2021
			20298576	MP 636: 6-Month SC Inspection of Recovery Scrubber	04/23/2021
			20299298	MP 3926: SC Insp WS 401 Tube Dimensions 1Y Reco	03/30/2021
			20300401	MP 1479: Annual SC LLD Heat Tray System Shutdown	04/02/2021
			20302872	MP 1718: Annual SC HL AL 5" COL LLD	05/31/2021
			20305459	MP 2317: Annual SC Test of Recovery Scrubber Auxiliary Fan	07/12/2021
			20305699	MP 1716: Monthly SC FLM HF SEC CONT LEAK DET	07/15/2021
			20306325	MP 1453: 2-Month SC Inspection LLD for Buildup	07/13/2021
			20306338	MP 1807: Quarterly SC Nitric Acid Day Tank HL Alarm	07/19/2021
			20306358	MP 2895: Quarterly SC Test Probe LLD HF 2" Column	08/02/2021
			20307709	MP 1840: Annual GP AL Nitrate	10/26/2021
			20309423	Annual SC Inspection LLD Electrical Junction Boxes	09/01/2021
			20309542	MP 636: 6-Month SC Inspection of Recovery Scrubber	09/29/2021
			20309556	MP 1453: 2-Month SC Inspection LLD for Buildup	09/06/2021
			20309900	MP 2411: Monthly SC HLTD and LLD Airflow Checks	09/08/2021
		20311430	MP 1467: Quarterly SC HF Day Tank HL Probe	10/17/2021	
		20311439	MP 1716: Monthly SC FLM HF SEC CONT LEAK DET	10/14/2021	
	20311457	MP 2411: Monthly SC HLTD and LLD Airflow Checks	10/06/2021		
	20312553	MP 2192: GP Primary and Raff Preventative Mainten	11/01/2021		
88030	ALARA Plans	N/A	BWXT NOG-L 2020 ALARA Report	May 2021	
	Calibration Records	N/A	Neutron Detector Calibration by an Offsite Vendor	12/16/2020 and 06/29/2021	
		RP-07-010	Ludlum Model 2241 Digital Ratemeter with Alpha Scintillation	Rev. 5	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Form 1	Probe Calibration (for alpha instruments 2683 and 2732) (06/24/2021, 06/25/2021, 12/02/2021, and 12/06/2021)	
		RP-07-017 Form 1	Tennelec Series S5E Calibration (for instrument 2141) - 12/17/2020	Rev. 16
		RP-07-017 Form 1	Tennelec Series S5E Calibration (for instrument 1689) - 08/17/2021	Rev. 16
		RP-07-017 Form 1	Tennelec Series S5E Calibration (for instrument 1688) - 07/27/2021	Rev. 16
		RP-07-017 Form 1	Tennelec Series S5E Calibration (for instrument 2069) - 08/16/2021	Rev. 16
		RP-07-017 Form 1	Tennelec Series S5E Calibration (for instrument 2090) - 05/26/2021	Rev. 16
		RP-07-017 Form 1	Tennelec Series S5E Calibration (for instrument 2130) - 09/29/2021	Rev. 16
		RP-07-017 Form 1	Tennelec Series S5E Calibration (for instrument 2359) - 11/10/2020	Rev. 16
		RP-07-022 Form 1	Eberline RO-20 Calibration (for gamma instrument 1191) - (04/15/2021 and 10/28/2021)	Rev. 14
		RP-07-042 Form 1	Ludlum Model 2241 Digital Ratemeter with G-M Detector Probe (for gamma instrument 3367) - Calibration (03/04/2021 and 09/08/2021)	Rev. 6
		RP-07-043 Form 1	Ludlum Model 2241 Digital Ratemeter with G-M Pancake Probe Calibration (for beta instruments 2715, 3175, and 3404) (dates: 11/09/2020, 03/09/2021, 05/04/2021, 06/07/2021, 09/01/2021, 10/28/2021, 11/23/2021)	Rev. 5
		RP-07-044 Form 1	Canberra Sirius-4AB Calibration (Personnel Contamination Monitor #2967) - (01/26/2021 and 07/21/2021)	Rev. 6
		RP-07-044 Form 1	Canberra Sirius-4AB Calibration (Hand & Foot Contamination Monitor #2875) (12/08/2020 and 06/17/2021)	Rev. 6
		RP-07-044 Form 1	Canberra Sirius-4AB Calibration (Hand & Foot Contamination Monitor #2680) - (12/10/2020 and 06/23/2021)	Rev. 6
		RP-07-044 Form 1	Canberra Sirius-4AB Calibration (Hand & Foot Contamination Monitor #2800) - (01/26/2021 and 07/21/2021)	Rev. 6
		RP-07-044	Canberra Sirius-4AB Calibration (Hand & Foot Contamination	Rev. 6



Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Form 1	Monitors #2726 and #2799) - (11/18/2020, 05/19/2021, and 11/16/2021)	
		RP-07-044 Form 2	Canberra Sirius-4AB Calibration (Hand & Foot Contamination Monitor #3532) - (04/28/2021 and 10/27/2021)	Rev. 6
		RP-07-044 Form 2	Canberra Sirius-5AB Calibration (Hand & Foot Contamination Monitor #3585) - (11/24/2020 and 11/16/2021)	Rev. 6
		RP-07-049 Form 1	Out-of-Calibration Report - Canberra Argos-5AB Calibration (Personnel Contamination Monitor #3441) - (04/08/2021)	Rev. 8
		RP-07-049 Form 1	Out-of-Calibration Report - Canberra Argos-5AB Calibration (Personnel Contamination Monitor #3440) - (04/12/2021)	Rev. 8
		RP-07-049 Form 1	Out-of-Calibration Report - Canberra Argos-5AB Calibration (Hand & Foot Contamination Monitor # 3585) - (05/20/2021)	Rev. 8
		RP-07-057 Form 1	MM1 Building - Criticality Accident Alarm System Annual Calibration - 2020	Rev. 24
		RP-07-057 Form 1	MM1 Building - Criticality Accident Alarm System Annual Calibration - 2021	Rev. 24
		RP-07-057 Form 1	RadCon - Criticality Accident Alarm System Annual Calibration - 2020	Rev. 24
		RP-07-057 Form 1	RadCon - Criticality Accident Alarm System Annual Calibration - 2021	Rev. 24
		RP-07-058 Form 1	Eberline HFM-7A Calibration (Hand & Foot Contamination Monitor #1984) - (01/26/2021 and 07/21/2021)	Rev. 8
		RP-07-069 Form 1	Canberra Argos-4AB Calibration (Hand & Foot Contamination Monitor #2959) - (06/17/2021)	Rev. 4
		RP-07-069 Form 2	Canberra Argos-5AB Calibration (Hand & Foot Contamination Monitor #3686) - (10/20/2021)	Rev. 4
		RP-07-072 Form 2	Bicron Surveyor Model "MS" with Alpha Scintillation Probe Calibration (for alpha instrument 1795) - (03/04/2021 and 09/08/2021)	Rev. 12
		RP-07-100 Form 1	Ludlum 9-4 Ion Chamber Calibration (for gamma instrument 3100)	Rev. 4
		RP-07-105 Form 1	Canberra LB4200 Calibration - Alpha/Beta Counter (for instrument 3362)	Rev. 6
		RP-07-105	Canberra LB4200 Calibration - Alpha-Beta Proportional	Rev. 6

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Form 1	Counter (for instrument 3363)	
		RP-07-105 Form 1	Canberra LB4200 Calibration - Alpha-Beta Proportional Counter (for instrument 3364)	Rev. 6
		RP-07-105 Form 1	Canberra LB4200 Calibration - Alpha-Beta Proportional Counter (for instrument 3365)	Rev. 6
		RP-07-105 Form 1	Canberra LB4200 Calibration - Alpha-Beta Proportional Counter (for instrument 3368)	Rev. 6
		RP-07-105 Form 1	Canberra LB4200 Calibration - Alpha-Beta Proportional Counter (for instrument 3369)	Rev. 6
		RP-07-105 Form 1	Canberra LB4200 Calibration - Alpha-Beta Proportional Counter (for instrument 3370)	Rev. 6
		RP-07-105 Form 1	Canberra LB4200 Calibration - Alpha-Beta Proportional Counter (for instrument 3371))	Rev. 6
		RP-07-109 Form 3	Canberra General iMatic Calibration (for instrument 3471) - (03/18/2021)	Rev. 0
		RP-07-109 Form 3	Canberra General iMatic Calibration (for instrument 3536) - (03/16/2021)	Rev. 0
		RP-07-109 Form 3	Canberra General iMatic Calibration (for instrument 3612) - (02/22/2021)	Rev. 0
		RP-07-109 Form 3	Canberra General iMatic Calibration (for instrument 3613) - (01/28/2021)	Rev. 0
		RP-07-109 Form 3	Canberra General iMatic Calibration (for instrument 3611) - (02/16/2021)	Rev. 0
		RP-07-109 Form 3	Canberra General iMatic Calibration (for instrument 3625) - (01/27/2021)	Rev. 0
		RP-07-109 Form 3	Canberra General iMatic Calibration (for instrument 3626) - (03/15/2021)	Rev. 0
		Corrective Action Documents	2019-0770	
	2020-0291			
	2020-0772			
	2021-0532			
	2021-1358			
	Miscellaneous	Organizational Chart	Environment, Safety, Health, & Safeguards (ESH&S)	09/01/2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Organizational Chart	Nuclear Materials Control (Radiological Waste and Transportation)	10/01/2021
	Procedures	E41-90	Sampling and Analysis of Low-Level Radioactive Waste Solids	Rev. 21
		OP-1027271	Operating Procedure for Low-Level Rad Waste Loaders Training/Testing (U)	Rev. 7
		QWI 15.1.5	Shipment of Radioactive Waste	Rev. 12
		QWI 5.1.14	Automated Systems/Programs Control	Rev. 31
		RMS-21	Classification, Characterization, Packaging, and Preparation of Low-Level Radioactive Waste and Mixed Waste	Rev. 24
		RMS-23	Low-Level Radioactive Waste Administrative Procedure	Rev. 11
		RP-07-057	General Procedure for Calibration and Control of Radiation Protection Instrument	Rev. 24
	Radiation Surveys	RP-03-010, Form 1 and Form 2	Plantwide Gamma Surveys for 2020	Rev. 10
	Radiation Work Permits (RWPs)	21-0006	Equipment Removal in Down Blend	Rev. 00
		21-0007	Equipment Removal in Zones 5 & 6 in 14A	Rev. 00
		21-0048	Package Non-Fissile Excepted Bottles in 55-Gallon Drums for Future Disposition in TP Solids	Rev. 00
		21-0060	WS-145 Temporary Operation	Rev. 00
		LTC-21-19	Health Physics and Radiological Surveillance in High Radiation Areas	Rev. 0
		LTC-21-22	Routine Entries into Building J and Building J Annex	Rev. 0
	Self-Assessments	RP-13-003, Forms 1, 2, and 3	Radiation Protection/Health Physics Quarterly Audits: 4th Quarter 2020; 1st, 2nd, 3rd Quarter 2021	Rev. 13 for Forms 1 & 3, Rev. 14 for Form 2
	88045	Corrective Action Documents	2020-1221	
Drawings		STEC5 1013E	BWXT NOG-L and LTC D and D Oversight Areas	Rev. 5
		STEC9 1000E	Contaminated Site Plan	Rev. 10
Engineering Evaluations		NMCTWR 21-010	Evaluation of DOT Regulations and Reporting Requirements Related to the Bay 12A Saw Incident	Rev. 0
		RPTWR 18-014	Review of Radiation Protection Monitoring Well Data and Related Subjects	Rev. 0

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		RPTWR 18-017	Filtration and Sampling Issues for NOG-L Shallow Monitoring Wells	Rev. 0
		RWTWR 18-018	FEP 1 Monitoring Well Uranium Excursion, Actions, and Evaluation	Rev. 1
	Miscellaneous	EA-GEL-2021-06-07	BWXT Supplier Quality Audit Report	Rev. 0
		EA-NMIS-21-04-14	BWXT Supplier Quality Audit Report	Rev. 0
		N/A	2020/2021 Elevated Environmental Vegetation Sample #4 Evaluation	Rev. 0
		N/A	Semi-Annual Effluent Monitoring Report	08/24/2021
		N/A	Semi-Annual-Effluent Monitoring Report	02/19/2021
		N/A	Waste Sample Results from GEL Laboratories	11/24/2020, 04/26/2021, 07/14/2021
		N/A	Pressure Differentials Across HEPA Filter (various)	10/14/2021
		N/A	Stack Velocity Measurements, SFF Stack Velocity Measurements, RECOVERY	10/14/2021
		N/A	2021 Final Liquid Effluent Data	
		N/A	2021 Cooling Tower (Outfall 002) (Storm Water Runoff) liquid effluent measurements	
		N/A	2021 Bryant's Pond (Outfall 003) liquid effluent measurements	
		N/A	Secondary Effluent Release Point Sample Analysis Results from July 2020 to October 2021	
		N/A	2020 Boundary Air Summary	
		N/A	3rd & 4th Quarter 2020 Environmental Samples 1st & 2nd Quarter 2021 Environmental Samples	
		N/A	Potable, D.I., and Recycle Water Analysis Results, 07/12/20 to 11/02/21	
			RSIN 21-0042	3rd Quarter 2021 Elevated Environmental Sampling Review
	Procedures	RP-08	Environmental and Effluent Monitoring and Controls	Rev. 10
		RP-08-003	Sample Collection from Exhaust Stacks and Their Analysis	Rev. 29
		RP-08-006	Final Liquid Effluent Preparation and Analysis	Rev. 18
		RP-10-001	Radiation Control Supervisor and Technician Training	Rev. 15

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
88135.02	Corrective Action Documents	2016-0940	Column overflow spill due to DI water left opened on evaporator no. 6, incident 07/24/2016	12/28/2021
		2021-1440	RTR compact special nuclear material content out of specification, incident 10/01/2021	10/21/2021
		2021-1490	Loose hardware identified on shipping container	10/11/2021
	Drawings	14AD2_1010	Uranium Extraction (Evap #1)	Rev. 12
		UPRR-30052	Evaporator 6 P&ID	Rev. 6
		UPRR-30053	Recovery Evaporators 2, 3, 4, and 5 P&ID	Rev. 4
		UPRR-30054	Primary Product Columns P&ID	Rev. 3
	Engineering Evaluations	NCS-2021-105	NCS Safety Concern for Encapsulated Fuel Cutting Event - CA202101568	11/11/21
		NCS-2021-108	NCS Safety Concern for Elevated Concentration in Recovery Raffinate Waste Tanks per CA202101643	12/03/2021
		NMCTWR 21-010	Evaluation of DOT Regulations and Reporting Requirements related to Encapsulated Fuel Cutting Saw Incident	11/09/21
	Miscellaneous	Correspondence	Conway, Ken C., BWXT NOG-L - ALARA Committee Secretary, letter to ALARA Committee and Health Physicists, BWXT NOG-L, Re: RSIN and Personnel Contamination Report for September 2021	10/13/2021
		Correspondence	Conway, Ken C., BWXT NOG-L - ALARA Committee Secretary, letter to ALARA Committee and Health Physicists, BWXT NOG-L, Re: Agenda October 2021 ALARA Meeting	10/18/2021
		Correspondence	Conway, Ken C., BWXT NOG-L - ALARA Committee Secretary, letter to ALARA Committee and Health Physicists, BWXT NOG-L, Re: ALARA Meeting Minutes from September 16, 2021 Meeting File	09/16/2021
		Correspondence	Conway, Ken C., BWXT NOG-L - ALARA Committee Secretary, letter to ALARA Committee and Health Physicists, BWXT NOG-L, Re: RSIN and Personnel Contamination Report for April 2021	05/12/2021
		Correspondence	Conway, Ken C., BWXT NOG-L - ALARA Committee Secretary, letter to ALARA Committee and Health Physicists, BWXT NOG-L, Re: Agenda Year-End 2021 ALARA Meeting	11/29/2021
		Correspondence	Conway, Ken C., BWXT NOG-L - ALARA Committee	10/21/2021
Correspondence		Conway, Ken C., BWXT NOG-L - ALARA Committee	10/21/2021	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
			Secretary, letter to ALARA Committee and Health Physicists, BWXT NOG-L, Re: ALARA Meeting Minutes from October 21, 2021 Meeting File		
		M2E801580A001	ES-3100 Shipping Package - Drum Assembly	Rev. C	
		Memo	Memo to File from K. Conway, RP Unit Manager, "Re: Incident Data 12A Saw Use"	11/09/2021	
		N-606	Critique Waiver Request (CA 2021-1490)	11/11/2021	
		N-79	Evaluation of Unusual Incident Report for shipping container identified with loose hardware	11/11/2021	
		N-79	Evaluation of Unusual Incident: SFF WS-300 did not shutdown during interlock test of hydrogen detector A3-LEL-T-01	11/05/2021	
		N/A	ALARA Meeting - ALARA Data Review Thru September 2021 (PowerPoint Slides)	October 2021	
		N/A	Open Safety: ALARA & RSIN Commitments Lists	10/05/2021	
		N/A	ALARA Meeting - ALARA Data Review Thru October 2021 (PowerPoint Slides)	12/02/2021	
		N/A	Open Safety: ALARA Commitments List	11/04/2021	
		N/A	Open Safety: RSIN Commitments List	11/02/2021	
		N/A	Semi-Annual Effluent Monitoring Report	08/24/2021	
		SAR 15.12	Liquid and Solid Waste Handling Processes in Uranium Recovery	Rev. 84	
		SAR 15.18	SFF Dry-End Processing - SFF Operation	Rev. 136	
		SAR 15.21	Low-Level Radioactive Waste Process Waste Operations	Rev. 79	
		SAR Appx. 15.12	Liquid and Solid Waste Handling Processes in Uranium Recovery	Rev. 30	
		SAR Appx. 15.18	SFF Dry-End Processing - SFF Operation	Rev. 69	
		SAR Appx. 15.21	Low-Level Radioactive Waste Process Waste Operations	Rev. 30	
		Procedures	OP-0061121	Primary Evaporator System	Rev. 31
			OP-0061123	Contacting Evaporator System	Rev. 25
	OP-0061124		Evaporator #6 Operation	Rev. 17	
	OP-0061242		Recovery Inline Monitor System	Rev. 37	
	OP-1013741		Use of Seals and Process Tags in Uranium Processing Services	Rev. 2	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Work Orders	Job Order 1251506	(Title CLASSIFIED)	
88135.04	Corrective Action Documents	2017-0268	SAR 15.42 safety control table improvement suggestion, incident 02/23/2017	12/15/2021
		2017-1288	Water trap IROFS for conventional lines 7 and 8 not installed, incident 09/26/2017	11/10/2021
		2017-1331	Water trap IROFS for conventional lines need evaluation, incident 10/09/2017	11/10/2021
		2019-1022	Stacking on transport card exceeded slab height limit on NCS posting, incident 07/24/2019	11/12/2021
		2020-1745	Daily assays for area waste drums not in accordance with procedures, incident 12/02/2020	11/12/2021
		2021-0047	CSB sprinkler relief valve installation remains outstanding, incident 01/09/2020	12/15/2021
		2021-0113	Improvement suggestion for NCS posting 15-42-002, incident 01/23/2020	12/15/2021
		2021-0975	Wire seal found broken on automated storage unit poison tray, incident 06/28/2021	11/12/2021
		2021-1208	Sprinkler obstruction is CSB, incident 08/21/2020	12/15/2021
		2021-1648	CSB sprinkler header over-pressurized. Incident 12/13/2017	12/15/2021
		NCS Posting 15-34-005	Conventional Glovebox	Rev. 3
	Drawings	FMO-040901-1	Evacuation and Recovery System	Rev. 1
		JJA1_1001	General Arrangement Container Storage Building Floor Plan, Mezzanine Plan, Sections, and Details	Rev. 4
		LP-2133	Vacuum Storage Chest	Rev. 1
		LT-3649	Transport Cart	Rev. 4
		LT-5289	Storage Chamber Insert	Rev. 1
		LT-6140	Conventional Insert for Vacuum Storage Chest	Rev. 1
		LT-6997	Vertical Storage Insert	Rev. 1
	Engineering Changes	CHG-10838	Administrative Changes to SAR Appendix 15.34	approved 07/29/2021
		CHG-2462	Update SAR 15.42 per SER 16-045 Phase 01 and CA 201700261	approved 09/19/2017

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		CHG-3562	Revise SAR 15.42 Appendix in response to CA 201700268	approved 10/23/2017
		CHG-5860	Proposed Intermediate Area Change	approved 02/14/2019
		CHG-5986	M11-F-070 Moderating Log Update	approved 03/21/2019
		CHG-6098	Physical Removal of Water Trap IROFS	approved 03/19/2019
		CHG-6269	Intermediate Area Modification	approved 04/29/2019
		CHG-6559	Change to SAR 15.34 per SER 18-023 (Phase 1), Removal of Lines 1 and 4	approved 06/13/2021
		CHG-9475	Revise Posting 15-42-001 for Container Storage Racks	approved 01/12/2021
		CHG-9668	Cleanroom in Container Storage Building	approved 02/01/2021
		CHG-9795	Changes to SAR 15.42 and SAR Appendix per SER 20-035 PH01	approved 01/27/2021
		CHG-9861	Update M11-FAWM-001, "Removal and Disposal of Box-Line Pre-Filters"	approved 03/09/2021
		SER 20-035	Install New Rack in CSF and Modify Row B	approved 06/14/2021
	Engineering Evaluations	NCS-2017-163	NCS Safety Concern Analysis for Water Trap System for Conventional Lines 7 and 8 Ventilation	10/05/2017
		NCS-2017-178	NCS Safety Analysis to Delete the Ventilation Water Trap from SAR 15.34 and Scenarios	10/24/2017
	Miscellaneous	N/A	Inspect & Track Inside Electronic Report for Bays 1A and 2A Hydraulic Pits Smoke Detector Inspection and Interlocks	05/2021 to 12/2021
		N/A	Inspect & Track Inside Electronic Report for Bays 1A and 2A General Area Smoke Detector Inspection (Annual)	06/2020 to 07/2021
		N/A	Inspect & Track Inside Electronic Report for Bays 1A and 2A Hydraulic Pits Sprinkler Flow Tests (QTRLY)	12/2020 to 09/2021
		NCS Posting 15-34-002	Conventional Glovebox	Rev. 3



Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
		NCS Posting 15-34-003	Conventional Glovebox	Rev. 3	
		NCS Posting 15-34-004	Residue/Scrap Glovebox	Rev. 1	
		NCS Posting 15-34-009	Storage Unit	Rev. 0	
		NCS Posting 15-34-012	Chest Cart	Rev. 0	
		NCS Posting 15-42-001	Container Storage Racks	Rev. 1	
		NCS Posting 15-42-002	Container Storage Building / Shipping Area	Rev. 0	
	Procedures	M11-B-034	FMO Allowable Stack Height Chart	Rev. 0	
		M11-F-070	U235 and Moderating Materials Control List - Conventional Line	Rev. 13	
		M11-F-072	U235 and Moderating Materials Control List - Residue Glovebox	Rev. 3	
		OP-0100110	Handling Scrap and Waste	Rev. 14	
		OP-1003724	Fuel Manufacturing Operations Areas Safety Controls	Rev. 31	
		OP-1027218	Container Storage Facility	Rev. 3	
		OP-1041311	(Title CLASSIFIED)	Rev. 14	
	88135.05	Corrective Action Documents	2017-0261	SAR 15.42 safety control table improvement suggestion, incident 02/23/2017	12/15/2021
2021-1418			SCBA high-pressure hose disconnected (while in use) and began to whip and blowdown air cylinder	10/09/2021	
Fire Plans		N/A	Pre-Fire Plan, Bay 7 - Map Section 6	02/17/2010	
		N/A	Pre-Fire Plan, Bay 5 and 6 Machine Shop - Map Section 5	01/03/2011	
		N/A	Pre-Fire Plan, Bays 8, 9, and 10 - Map Section 8	06/05/2014	
Miscellaneous		FSR-05	Facility Siting Review 5 - Bays 1A, 4A through 1-A and 12A; and Bays 2 through 13	Rev. 4	
Procedures		HS-ET-001	Emergency Team Training	Rev. 13	
88135.19		Drawings	UPRR-30118	Trough Dissolver	Rev. 4
		Engineering	CHG-8332	Add South-End P-Trap Drain Header to both High-Level	approved

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Changes		Trough Dissolver Enclosures in Recovery	07/21/2020
	Miscellaneous	SAR 15,05	High-Level Dissolution Process in Uranium Recovery	Rev. 144
		SAR 15.18	SFF Dry-End Processing SFF Operation	Rev. 136
	Procedures	OP-1018680	Recovery High-Level Dissolution	Rev. 46
		QWI 9.1.7	Preventive/Predictive Maintenance and Safety-Related Controls Testing Program	Rev. 12
88135.22	Corrective Action Documents	2021-1555	SFF WS-300 failed to initiate systematic shutdown during interlock test of FAS detector A3-LEL-T-01 (IROFS), incident 11/02/2021	11/19/2021
	Drawings	14AD2_1004	Uranium Extraction P&ID	Rev. 23
		14AD2_1005	Uranium Extraction P&ID	Rev. 20
		UPRR-30152	14A Weigh Columns P&ID	Rev. 1
	Engineering Changes	CHG-11424	Parameter Changes for FAS and OP-1001828 Updates	approved 11/11/2021
	Engineering Evaluations	NCS-2016-122	Nuclear Criticality Safety Release Supporting NCS Safety Analysis for Waterline Connection on the Primary and Raffinate Feed Columns	11/03/2016
	Miscellaneous	N-353	Safety Class Control Maintenance Extension Form (MP-4181)	11/30/2021
		SAR 15.18	SFF Dry-End Processing SFF Operation	Rev. 136
		SAR 15.5	High-Level Dissolution Process in Uranium Recovery	Rev. 144
	Procedures	OP-0061115	Operating Procedure for Primary Extraction System	Rev. 51
		OP-1001828	FAS Interlocks and Furnace Testing in SFF	Rev. 41 & 42
	Work Orders	20292916	Safety Class Inventory Leak Check Valves Recovery (Annual - MP4181)	11/15/2020