



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, ILLINOIS 60532-4352

June 13, 2024

EA-21-055

Jason Tilly
VP and General Counsel
North America Operations
Curium US LLC
111 Westport Plaza Drive
Suite 800
St. Louis, MO 63146

SUBJECT: CONFIRMATORY ORDER RELATED TO NRC REACTIVE INSPECTION REPORT
NO. 0300001/2019003 – CURIUM US LLC

Dear Jason Tilly:

The enclosed Confirmatory Order is being issued to Curium US LLC, as a result of a successful Alternative Dispute Resolution (ADR) session. As the representative of the licensee, you made the enclosed commitments as part of a settlement agreement between Curium and the U.S. Nuclear Regulatory Commission (NRC) concerning apparent violations of NRC requirements. The apparent violations were discussed in the enclosure to our letter dated January 11, 2024. The letter also stated that the NRC's Office of Investigations completed an investigation on April 7, 2021.

Our letter also informed you that the apparent violations were being considered for escalated enforcement action in accordance with the NRC's Enforcement Policy and provided you with the option of: (1) attending a Predecisional Enforcement Conference; or (2) requesting an ADR mediation session with the NRC.

In response to our letter, you requested ADR. An ADR mediation session was held on March 5-6, 2024, and a preliminary settlement agreement was reached. The elements of the preliminary agreement were formulated and agreed to at the mediation session. At the session, you agreed that a Confirmatory Order would be issued in a settlement of the apparent violations in order to avoid further action by the NRC. In light of the corrective actions you took and agreed to take, as described in the Confirmatory Order (Enclosure 1), the NRC is satisfied that its concerns will be addressed by making your commitments legally binding. As evidenced by your signed "Consent and Hearing Waiver Form" (Enclosure 2), dated May 31, 2024, you agreed to the issuance of the Confirmatory Order.

Pursuant to Section 223 of the Atomic Energy Act of 1954, as amended, any person who willfully violates, attempts to violate, or conspires to violate, any provision of this Confirmatory Order shall be subject to criminal prosecution, as set forth in that section. Violation of this Confirmatory Order may also subject the person to civil monetary penalties.

In accordance with Title 10 of the *Code of Federal Regulations* (CFR) 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, along with its enclosures, 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>. The Confirmatory Order will be published in the Federal Register. The NRC also publishes Confirmatory Orders on its Web site under Significant Enforcement Actions at <http://www.nrc.gov/about-nrc/regulatory/enforcement.html>.

Sincerely,



Signed by Giessner, Jack
on 06/13/24

John B. Giessner
Regional Administrator

Docket No. 030-00001
License No. 24-04206-01

Enclosures:

1. Confirmatory Order
2. Consent and Hearing Waiver

cc w/encl: State of Missouri

Letter to J. Tilly from J. Giessner dated June 13, 2024

SUBJECT: CONFIRMATORY ORDER RELATED TO NRC REACTIVE INSPECTION REPORT
NO. 0300001/2019003 – CURIUM US LLC

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OFFICE	RIII-EICS		RIII-DRSS		RIII-DRSS		NMSS		OE	
NAME	GEdwards:bw		REdwards		DCurtis		KWilliams		JPeralta	
DATE	4/11/2024		4/16/2024		4/18/2024		4/20/2024		6/5/2024	
OFFICE	OE		OGC-NLO		OGC		RIII-EICS		RIII-ORA	
NAME	DPelton		MSimon		SRogers		DBetancourt-Roldan		JGiessner	
DATE	6/5/2024		6/5/2024		4/22/2024		6/12/2024		6/13/2024	

OFFICIAL RECORD COPY

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of
Curium US LLC

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Docket No. 030-00001
License No. 24-04206-01
EA-21-055

CONFIRMATORY ORDER MODIFYING LICENSE
(EFFECTIVE UPON ISSUANCE)

I

Curium US LLC holds Materials License No. 24-04206-01 issued on May 18, 2023 (Amendment No. 105), by the U.S. Nuclear Regulatory Commission (NRC or Commission) pursuant to Part 30 of Title 10 of the *Code of Federal Regulations* (10 CFR). At the time of the events that led to the NRC's October 2019 reactive inspection, Curium conducted operations under Amendment 99 of License No. 24-04206-01, which was issued on July 2, 2019. The license authorizes the use of byproduct material, as described in the application dated December 22, 2011, in accordance with conditions specified in the license.

This Confirmatory Order is the result of an agreement reached during an Alternative Dispute Resolution (ADR) mediation session conducted on March 5-6, 2024, in Lisle, Illinois.

II

On October 29-30, 2019, the NRC conducted a reactive inspection with continued in-office review through December 21, 2023. On January 11, 2024, the NRC issued Inspection Report 03000001/2019003 to Curium US LLC which documented the identification of 10 apparent violations that occurred at the Maryland Heights, Missouri facility as the result of a contamination event on August 19, 2019. The apparent violations were being considered for escalated enforcement action in accordance with the NRC Enforcement Policy. The apparent violations involved the failure to: (1) report, within 24 hours of discovery, an event that involved loss of control of licensed material that caused the release of radioactive material, so that, had

an individual been present for 24 hours in the area, the individual could have received an intake in excess of one occupational annual limit on intake, as required by 10 CFR 20.2202(b)(2); (2) notify the NRC within 24 hours after the discovery of an unplanned contamination event as required by 10 CFR 30.50(b)(1); (3) assess dose to determine the compliance with occupational dose equivalent limits by taking suitable and timely measurements of concentrations of radioactive materials in air in the work area, quantities of radionuclides in the body, or quantities of radionuclides excreted from the body as required by 10 CFR 20.1204(a); (4) conduct an adequate survey to ensure compliance with limits on licensed material released into sanitary sewerage, as required by 10 CFR 20.1501 and 10 CFR 20.2003(a)(2); (5) furnish dose information to an individual as required by 10 CFR 19.13(b)(1); (6) maintain records of surveys as required by 10 CFR 20.2103(a); (7) provide information to the Commission that is complete and accurate in all material respects as required by 10 CFR 30.9; (8) maintain Curium's Corrective Action Program as required by License Condition 18; (9) comply with the terms and conditions of the Certificate of Compliance (CoC) No. 9320 as required by 10 CFR 71.71(c)(2); and (10) implement Curium's standard operating procedure (SOP) for performing personal contamination surveys as required by License Condition 21.

By letter dated January 11, 2024, the NRC provided Curium with a reactive inspection report with the opportunity to: (1) request a Predecisional Enforcement Conference (PEC); or (2) request ADR.

In response to the NRC's offer, Curium requested the use of the NRC's ADR process to resolve differences it had with the NRC. On March 5-6, 2024, the NRC and Curium met in an ADR session mediated by a professional mediator, arranged through Cornell University's Institute on Conflict Resolution. The ADR process is one in which a neutral mediator, with no decision-making authority, assists the parties in reaching an agreement on resolving any differences regarding the dispute. The Confirmatory Order is issued pursuant to the agreement reached during the ADR process.

III

During the ADR session, Curium and the NRC reached a preliminary settlement in an Agreement in Principle, which is reproduced in full below:

Pursuant to the Nuclear Regulatory Commission Office of Enforcement's Enforcement Alternative Dispute Resolution (ADR) Program, the following are the terms and conditions agreed upon in principle by Curium US LLC (Curium) and the Nuclear Regulatory Commission (NRC) relating to the apparent violations identified in the inspection report No. 03000001/2019003(DRSS) issued by the NRC to Curium on January 11, 2024.

The NRC seeks lasting and effective corrective actions to preclude any additional contamination incidents similar to the incident that occurred at Curium's Maryland Heights, Missouri, manufacturing facility on August 19, 2019.

Therefore, the parties agree to the following terms and conditions:

I. Hot Cell Procedures

Curium will revise its relevant Standard Operating Procedures (SOPs), including the SOP for hot cell operations, to ensure that payload internals, including the secondary container (R2 sleeve), are removed from shipping casks before the casks are removed from the hot cell except as provided in paragraph 3 of this section of the Agreement.

1. Curium will use a tool that Curium has developed to remove detached R2 sleeves from casks while they are in the hot cell.
2. In the event that a R2 sleeve becomes detached, Curium will include in the revised SOP for hot cell operations a requirement that a second person be present to observe and assist in removal of the R2 sleeve in the hot cell.
3. If Curium is unable to remove a detached R2 sleeve from a cask:
 - a. Curium will reseal the cask in the hot cell and place the cask in storage in Building 650;
 - b. The cask containing the R2 sleeve will be labeled with prominent identification that the cask contains an R2 sleeve prior to removing the cask from Building 650;
 - c. Once an external reading on contact of the cask is below 5 mR per hour, the cask may be removed from Building 650 and moved to Building 500;
 - d. Once an external reading on contact of the cask is below 3 mR per hour, the R2 sleeve may be removed provided that:
 - i. A Health Physics support employee is present; and

- ii. Air sampling for airborne radioactivity is performed for the duration of the cleaning of the cask;
- e. Each occurrence shall be documented in the Radiation Safety Corrective Action Program.
- 4. Within 120 days of the effective date of the Confirmatory Order (CO), Curium will submit the revised procedures to the NRC for review and comment to verify that the revised procedures meet the requirements of Section I of this Agreement.
- 5. Within 120 days after receiving the results of the NRC's review, Curium will implement the revised SOPs and provide initial training to all V4 technicians and their supervisors.
- 6. Curium will add to their procedures a requirement to provide training to all new V4 technicians and all new V4 technician supervisors on these revised SOPs.
- 7. For a period of 5 years after the effective date of the CO, prior implementing any subsequent revisions to these SOPs with respect to the requirements of Section I of this Agreement, Curium will submit the proposed revisions to the NRC for review to verify that the revised procedures meet Section I requirements.

II. Safety Culture

The NRC acknowledges that Curium has taken the following actions with respect to safety culture: (a) 2022 Safety Culture Assessment; (b) Curium's CEO provided a site wide safety culture statement to all employees in North America; (c) conducted initial Safety Leadership Training; and (d) developed a safety culture plan (Project VPP-Safety Culture).

- 1. Within 270 days of the effective date of the CO, Curium will contract with the same vendor that conducted the 2022 Safety Culture Assessment to perform a follow-up fleet wide safety culture assessment.
 - a. Curium will evaluate the results of the assessment, including any recommendations, and take appropriate actions.
 - b. Curium will make the assessment available to the NRC upon request.
- 2. Between 12 and 18 months after the completion of the follow-up fleet wide safety culture assessment, Curium will conduct a subsequent assessment of the fleet-wide safety culture using the same vendor.
 - a. Curium will evaluate the results of the assessment, including any recommendations, and take appropriate actions.
 - b. Curium will make the assessment available to the NRC upon request.

3. Within 180 days of the effective date of the CO, Curium will conduct Safety Leadership Training for their Executive Leadership Team (ELT) and the People Leaders in Operations, R&D, and Quality groups (hereinafter referred to as "SLT") with at least 90 percent participation for each of the ELT and of the SLT.

III. Corrective Action Program for Radiation Safety

Curium will contract with an independent external reviewer to conduct an independent assessment of the Corrective Action Program for radiation safety (CAP) governed by SOP 33-201 and prepare a report of the findings.

1. Prior to entering into a contract with the independent reviewer, Curium will provide the reviewer's name and qualifications to the NRC for review to verify independence and qualification.
2. The assessment will look backwards at least 4 years from the effective date of the CO and will evaluate, at a minimum, the following items: (a) Curium's ability to identify and enter items into the CAP; (b) Curium's ability to evaluate and prioritize issues in the CAP; and (c) Curium's ability to track and implement timely corrective actions.
3. If issues are identified in the assessment that indicate the CAP is not functioning properly, the independent reviewer will make specific recommendations in the report on how to address and correct those issues. Curium will evaluate the results of the assessment, including any recommendations, and take appropriate actions if necessary.
4. The CAP assessment and final report will be completed within one year of the effective date of the CO. Curium will make the final CAP assessment report available to the NRC upon request.

IV. Event Reporting

Within 180 days of the effective date of the CO, Curium will develop and implement a procedure for reporting events to the NRC.

1. The procedure will include instructions for evaluating an event to determine whether it meets NRC reportability requirements in 10 CFR part 20 and 10 CFR part 30 and for documenting the results of the evaluation. This procedure will ensure that at least two qualified individuals are involved in the evaluation. The instructions will specifically address how to evaluate whether each criterion in 10 CFR sections 20.2202 and 30.50 has been met.
2. Within 120 days of implementing the procedure, Curium will train all health physics personnel and any other personnel involved in making reportability determinations on the procedure.
3. Curium will train all new health physics personnel and any other new personnel involved in making reportability determinations on the procedure.

4. Curium will make the procedure available to the NRC upon request.

V. Training

Curium will develop and implement live training as specified below:

1. Within 180 days of the effective date of CO, Curium will insert a brief case study about the 2019 contamination event and lessons learned into the annual radiation safety training provided to all radiation workers.
2. Within 180 days of the effective date of the CO, Curium will develop an in-depth case study (e.g. 45-60 minutes) about the 2019 contamination event and lessons learned and provide that training to the Curium SLT.
3. Within 180 days of the effective date of the CO, Curium will develop an in-depth case study (e.g. 45-60 minutes) about the 2019 contamination event and lessons learned and provide that training to the Curium ELT.
4. Within 180 days of the effective date of the CO, all health physics personnel will receive training on managing contamination events and contaminated personnel. Topics for this training will include, at a minimum, the following: conducting surveys and air sampling for contamination events; maintain records of surveys; estimating of extent of contamination; internal dosimetry and dose assessment, including bioassays; decontamination/treatment of contaminated persons and items; relevant licensee procedures; and relevant NRC regulations and guidance. This training will be provided on a recurring basis. All new health physics personnel will receive the training during qualification.
5. Curium will ensure that the annual radiation safety training for radiation workers will include training on what to do if the worker becomes contaminated.
6. The Health Physics department will send out periodic safety messages, at least quarterly, to the facility regarding current radiation safety topics for two years from effective date of the CO.

VI. Internal Dose Assessment and Updated Dose Records

Within 180 days of the effective date of the CO, Curium will contract with an independent consultant to complete an internal dose assessment for the individual who was involved in the August 19, 2019, contamination event (the "affected individual").

1. Prior to entering into a contract with an independent consultant, Curium will provide the consultant's qualifications to the NRC for review to verify independence and qualifications.
2. Curium will provide the consultant with a complete copy of Investigation Report 19-0088, including attachments, for use in conducting the assessment.

3. The independent consultant will provide Curium with a written report that includes the estimated internal dose to the affected individual and a description of the methods and assumptions used to perform the dose calculations. Curium will make the written report available to the NRC upon request.
4. Upon completion of the internal dose assessment, Curium's Radiation Safety Officer (RSO) will review the written report and decide whether the estimated dose is reasonable. The RSO will then present the results of the assessment to the Maryland Heights facility's Radiation Safety Committee (RSC).
5. The decision and endorsement will be documented in the minutes of the RSC. If the RSC or the RSO disagree with the independent dose assessment, the basis for the disagreement will be explained in the minutes of the RSC. Curium will make the minutes of the RSC available to the NRC upon request.
6. Curium will provide an updated NRC Form 5 for the affected individual as appropriate.

VII. Sharing Operating Experience

Within one year of the effective date of the CO, Curium will offer to make a presentation on the 2019 contamination event and management of the response to one national organization, including local chapters, whose membership comprises health physics and radiation professionals (e.g., the Health Physics Society, Society of Nuclear Medicine, or the American Nuclear Society).

1. If the presentation is accepted, Curium will inform the NRC at least a month in advance of the date and location.
2. Curium will provide the slides for the presentation to the NRC upon request.

VIII. Building 500 Evaluation

Within 180 days of the effective date of the CO, Curium will evaluate the Building 500 facilities at Maryland Heights, Missouri, based on the assessment that the facilities in Building 500 are not appropriate for cask cleaning activities other than wipe downs, as stated on pages 16 and 17 of Curium's Investigation of Incident No. 19-0088.

1. Curium will document the assessment and develop and implement appropriate corrective actions, if necessary, to provide sufficient radiation protection measures for the cask cleaning activities conducted in Building 500.

IX. Sanitary Sewage

Within 180 days of the effective date of the CO, Curium will revise the SOP for responding to a contamination event (33-141) to establish a process for

assessing any discharge of radioactive material into the public sanitary sewer system to ensure compliance with regulatory requirements. The revised procedure will require that the results of this assessment will be documented. Curium will make the revised procedure available to the NRC upon request.

X. Administrative

1. In exchange for the commitments and corrective actions agreed to by Curium;
 - a. The NRC agrees not to pursue any further enforcement action in connection with the August 19, 2019, contamination event as described in NRC's January 11, 2024, reactive inspection report to Curium US LLC.
 - b. The NRC agrees to exercise discretion to refrain from issuing a Notice of Violation or proposed civil penalty for any violations arising from the results of the independent internal dose evaluation that Curium has agreed to perform.
 - c. The NRC agrees not to issue a civil penalty for apparent violations identified in the NRC's January 11, 2024, reactive inspection report to Curium US LLC.
2. This agreement is binding upon all successors and assigns of Curium.

The NRC acknowledges that Curium has completed the following corrective actions:

(1) conducting a fleet-wide safety culture assessment in 2022, (2) providing a site-wide safety culture statement from Curium's CEO to all employees in North America, (3) conducting initial "Safety Leadership Training," (4) developing a safety culture plan (Project VPP-Safety Culture), (5) updating the shallow dose assessment for the contaminated individual, and (6) informing the individual of the updated dose assessment results. Based on these completed actions, and the commitments described in Section V below, the NRC agrees not to pursue any further enforcement action in connection with the August 19, 2019, contamination event; not to issue a civil penalty for the apparent violations identified in NRC Inspection Report 03000001/2019003; and to exercise discretion to refrain from issuing a Notice of Violation or civil penalty for any violations arising from the results of the independent internal dose evaluation that Curium will perform.

On May 31, 2024, Curium consented to issuing the Confirmatory Order with the commitments as described in Section V below. Curium further agreed that this Confirmatory Order is to be effective upon issuance, that the agreement memorialized in this Confirmatory Order settles the matter between the parties, and that it has waived its right to a hearing.

IV

I find that Curium's completed actions, as described in Section III above, combined with the commitments as set forth in Section V are acceptable and necessary, and conclude that with these commitments the public health and safety are reasonably assured. In view of the foregoing, I have determined that public health and safety require that Curium's commitments be confirmed by this Confirmatory Order. Based on the above and Curium's consent, this Confirmatory Order is effective upon issuance.

By no later than thirty (30) days after the completion of the commitments specified in Section V, Curium is required to notify the NRC in writing and summarize its actions.

V

Accordingly, pursuant to Sections 81, 161b, 161i, 161o, 182, and 187 of the Atomic Energy Act of 1954, as amended, and the Commission's regulations in 10 CFR 2.202 and 10 CFR Parts 30 and 35, IT IS HEREBY ORDERED, EFFECTIVE UPON ISSUANCE, THAT LICENSE NO. 24-04206-01 IS MODIFIED AS FOLLOWS:

A. Hot Cell Procedures

1. Curium will revise its relevant Standard Operating Procedures (SOPs), including the SOP for hot cell operations, to ensure that payload internals, including the secondary container (R2 sleeve), are removed from shipping casks before the casks are removed from the hot cell, except as provided in paragraph V.A.1.c below. The revisions will address the following items:
 - a. A tool developed by Curium will be used to remove detached R2 sleeves from casks while they are in the hot cell.

- b. In the event that a R2 sleeve becomes detached, a second person will be present to observe and assist in removal of the R2 sleeve in the hot cell.
- c. If Curium is unable to remove a detached R2 sleeve from a cask in the hot cell:
 - i. Curium will reseal the cask in the hot cell and place the cask in storage in Building 650;
 - ii. The cask containing the R2 sleeve will be labeled with prominent identification that the cask contains an R2 sleeve prior to removing the cask from Building 650;
 - iii. Once an external reading on contact of the cask is below 5 mR per hour, the cask may be removed from Building 650 and moved to Building 500;
 - iv. Once an external reading on contact of the cask is below 3 mR per hour, the R2 sleeve may be removed in Building 500 provided that a Health Physics support employee is present and air sampling for airborne radioactivity is performed for the duration of cask cleaning.
 - v. Each occurrence shall be documented in the Radiation Safety Corrective Action Program.
- 2. Within 120 days of the effective date of the Confirmatory Order (CO), Curium will submit the revised SOPs to the NRC for review and comment to verify that the revised SOPs meet the requirements of paragraph V.A.1.
- 3. Within 120 days after receiving the results of the NRC's review, Curium will implement the revised SOPs and provide initial training to all manufacturing technicians assigned to work V4 hot cells and their supervisors.
- 4. Curium will add to their procedures a requirement to provide training to all new manufacturing technicians assigned to work V4 hot cells and supervisors of these manufacturing technicians on these revised SOPs.
- 5. For a period of 5 years after the effective date of the CO, prior to implementing any subsequent revisions to these SOPs with respect to the requirements of paragraph

V.A.1, Curium will submit the proposed revisions to the NRC for review to verify that the revisions meet the requirements of paragraph V.A.1.

B. Safety Culture

1. Within 270 days of the effective date of the CO, Curium will contract with the same vendor that conducted the 2022 Safety Culture Assessment, or a vendor with similar qualifications, to perform a follow-up fleet-wide safety culture assessment.
 - a. Curium will evaluate the results of the assessment, including any recommendations, take appropriate actions, and document any actions taken.
 - b. Curium will make the assessment available to the NRC upon request.
2. Between 12 and 18 months after the completion of the follow-up fleet wide safety culture assessment, Curium will conduct a subsequent assessment of the fleet-wide safety culture using the same vendor or a vendor with similar qualifications.
 - a. Curium will evaluate the results of the assessment, including any recommendations, take appropriate actions, and document any actions taken.
 - b. Curium will make the assessment available to the NRC upon request.
3. Within 180 days of the effective date of the CO, Curium will conduct the Aubrey Daniels International “Safety Leadership Training” for their Executive Leadership Team (ELT) and the People Leaders in Operations, R&D, and Quality groups (hereinafter referred to as “SLT”) with at least 90 percent participation for each of the ELT and of the SLT.

C. Corrective Action Program for Radiation Safety

1. Curium will contract with an independent external reviewer to conduct an independent assessment of the Corrective Action Program (CAP) for radiation safety governed by SOP 33-201 and prepare a written report of the findings. Prior to entering into a contract with the independent reviewer, Curium will provide the reviewer’s name and qualifications to the NRC for review to verify the reviewer’s independence and qualifications.

2. The assessment will look backwards at least 4 years from the effective date of the CO and will evaluate, at a minimum, the following items: (a) Curium's ability to identify and enter items into the CAP; (b) Curium's ability to evaluate and prioritize issues in the CAP; and (c) Curium's ability to track and implement timely corrective actions.
3. If issues are identified in the assessment that indicate the CAP is not functioning properly, the independent reviewer will make specific recommendations in the report on how to address and correct those issues. Curium will evaluate the results of the assessment, including any recommendations, take appropriate actions if necessary, and document any actions taken.
4. The CAP assessment and final written report will be completed within one year of the effective date of the CO. Curium will make the final written report available to the NRC upon request.

D. Event Reporting

1. Within 180 days of the effective date of the CO, Curium will develop and implement a procedure for reporting events to the NRC. The procedure will include instructions for evaluating an event to determine whether it meets NRC reportability requirements in 10 CFR Part 20 and 10 CFR Part 30 and for documenting the results of the evaluation. This procedure will ensure that at least two qualified individuals are involved in the evaluation. The instructions will specifically address how to evaluate whether each criterion in 10 CFR sections 20.2202 and 30.50 has been met.
2. Within 120 days of implementing the procedure, Curium will provide training on the procedure to all health physics personnel and any other personnel involved in making reportability determinations.
3. Curium will provide training on the procedure to all new health physics personnel and any other new personnel involved in making reportability determinations.
4. Curium will make the procedure available to the NRC upon request.

E. Training

1. Curium will develop and implement live training as specified below:
 - a. Within 180 days of the effective date of CO, Curium will insert a brief case study about the 2019 contamination event and lessons learned into the annual radiation safety training provided to all radiation workers.
 - b. Within 180 days of the effective date of the CO, Curium will develop an in-depth case study (e.g. 45-60 minutes) about the 2019 contamination event and lessons learned and provide that training to the Curium SLT.
 - c. Within 180 days of the effective date of the CO, Curium will develop an in-depth case study (e.g. 45-60 minutes) about the 2019 contamination event and lessons learned and provide that training to the Curium ELT.
 - d. Within 180 days of the effective date of the CO, all health physics personnel will receive training on managing contamination events and contaminated personnel. Topics for this training will include, at a minimum, the following: conducting surveys and air sampling for contamination events; maintain records of surveys; estimating of extent of contamination; internal dosimetry and dose assessment, including bioassays; decontamination/treatment of contaminated persons and items; relevant licensee procedures; and relevant NRC regulations and guidance. This training will be provided on a recurring basis (not less frequently than every three years). All new health physics personnel will receive the training during qualification.
2. Curium will ensure that the annual radiation safety training for radiation workers will include training on what to do if a worker becomes contaminated.
3. The Health Physics department will send out periodic safety messages, at least quarterly, to the facility regarding current radiation safety topics for two years starting on the effective date of the CO.

F. Internal Dose Assessment and Updated Dose Records

1. Within 180 days of the effective date of the CO, Curium will contract with an independent consultant to complete an internal dose assessment for the individual who was involved in the August 19, 2019, contamination event (the “affected individual”).
 - a. Prior to entering into a contract with an independent consultant, Curium will provide the consultant’s qualifications to the NRC for review to verify the consultant’s independence and qualifications.
 - b. Curium will provide the consultant with a complete copy of Investigation of Incident Report 19-0088, including attachments, for use in conducting the assessment.
 - c. The independent consultant will provide Curium with a written report that includes the estimated internal dose to the affected individual and a description of the methods and assumptions used to perform the dose calculations. Curium will make the written report available to the NRC upon request.
2. Within 90 days of completion of the internal dose assessment, Curium’s Radiation Safety Officer (RSO) will (a) review the written report and decide whether the estimated dose is reasonable, and (b) present the results of the assessment to the Maryland Heights facility’s Radiation Safety Committee (RSC).
3. The RSO’s decision and RSC’s views will be documented in the minutes of the RSC. If the RSC or the RSO disagree with the independent dose assessment, the basis for the disagreement will be explained in the minutes of the RSC. Curium will make the minutes of the RSC available to the NRC upon request.
4. Curium will provide an updated NRC Form 5 for the affected individual as appropriate.

G. Sharing Operating Experience

1. Within one year of the effective date of the CO, Curium will offer to make a presentation on the 2019 contamination event and management of the response to one national organization, including local chapters, whose membership comprises health physics and

radiation professionals (e.g., the Health Physics Society, Society of Nuclear Medicine, or the American Nuclear Society). If the presentation is accepted, Curium will designate an appropriate person to make the presentation. Curium will inform the NRC at least a month in advance of the date and location.

2. Curium will provide the slides for the presentation to the NRC upon request.

H. Building 500 Evaluation

1. Within 180 days of the effective date of the CO, Curium will evaluate the Building 500 facilities at its Maryland Heights, Missouri, location based on Curium's assessment that the facilities in Building 500 are not appropriate for cask cleaning activities other than wipe downs, as stated on pages 16 and 17 of Curium's Investigation of Incident Report No. 19-0088.
2. Curium will document the evaluation and develop and implement appropriate corrective actions, if necessary, to provide sufficient radiation protection measures for the cask cleaning activities conducted in Building 500.

I. Sanitary Sewage

1. Within 180 days of the effective date of the CO, Curium will revise SOP 33-141 (the procedure for responding to a contamination event) to establish a process for assessing any discharge of radioactive material into the public sanitary sewer system to ensure compliance with regulatory requirements. The revised procedure will require that the results of this assessment will be documented.
2. Curium will make the revised procedure available to the NRC upon request.

This agreement is binding upon successors and assigns of Curium US LLC. The Regional Administrator, Region III may, in writing, relax or rescind any of the above conditions upon demonstration of good cause by Curium or its successors.

In accordance with 10 CFR 2.202 and 10 CFR 2.309, any person adversely affected by this Confirmatory Order, other than Curium, may request a hearing within thirty (30) calendar days of the date of issuance of this Confirmatory Order. Where good cause is shown, consideration will be given to extending the time to request a hearing. A request for extension of time must be made in writing to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555, and include a statement of good cause for the extension.

All documents filed in NRC adjudicatory proceedings, including a request for hearing, a petition for leave to intervene, any motion or other document filed in the proceeding prior to the submission of a request for hearing or petition to intervene (hereinafter "petition"), and documents filed by interested governmental entities participating under 10 CFR 2.315(c), must be filed in accordance with the NRC's E-Filing rule (72 FR 49139; August 28, 2007, as amended at 77 FR 46562, August 3, 2012). The E-Filing process requires participants to submit and serve all adjudicatory documents over the internet, or in some cases to mail copies on electronic storage media. Participants may not submit paper copies of their filings unless they seek an exemption in accordance with the procedures described below.

To comply with the procedural requirements of E-Filing, at least 10 days prior to the filing deadline, the participant should contact the Office of the Secretary by e-mail at hearing.docket@nrc.gov, or by telephone at 301-415-1677, to (1) request a digital identification (ID) certificate, which allows the participant (or its counsel or representative) to digitally sign submissions and access the E-Filing system for any proceeding in which it is participating; and (2) advise the Secretary that the participant will be submitting a petition or other adjudicatory document (even in instances in which the participant, or its counsel or representative, already holds an NRC-issued digital ID certificate). Based upon this information, the Secretary will establish an electronic docket for the hearing in this proceeding if the Secretary has not already established an electronic docket.

Information about applying for a digital ID certificate is available on the NRC's public Web site at <http://www.nrc.gov/site-help/e-submittals/getting-started.html>. Once a participant has obtained a digital ID certificate and a docket has been created, the participant can then submit adjudicatory documents. Submissions must be in Portable Document Format (PDF). Additional guidance on PDF submissions is available on the NRC's public Web site at <http://www.nrc.gov/site-help/electronic-sub-ref-mat.html>. A filing is considered complete at the time the document is submitted through the NRC's E-Filing system. To be timely, an electronic filing must be submitted to the E-Filing system no later than 11:59 p.m. Eastern Time on the due date. Upon receipt of a transmission, the E-Filing system time-stamps the document and sends the submitter an e-mail notice confirming receipt of the document. The E-Filing system also distributes an e-mail notice that provides access to the document to the NRC's Office of the General Counsel and any others who have advised the Office of the Secretary that they wish to participate in the proceeding, so that the filer need not serve the document on those participants separately. Therefore, applicants and other participants (or their counsel or representative) must apply for and receive a digital ID certificate before adjudicatory documents are filed so that they can obtain access to the documents via the E-Filing system.

A person filing electronically using the NRC's adjudicatory E-Filing system may seek assistance by contacting the NRC's Electronic Filing Help Desk through the "Contact Us" link located on the NRC's public Web site at <http://www.nrc.gov/site-help/e-submittals.html>, by e-mail to MSHD.Resource@nrc.gov, or by a toll-free call at 1-866-672-7640. The NRC Electronic Filing Help Desk is available between 9 a.m. and 6 p.m., Eastern Time, Monday through Friday, excluding government holidays.

Participants who believe that they have a good cause for not submitting documents electronically must file an exemption request, in accordance with 10 CFR 2.302(g), with their initial paper filing requesting authorization to continue to submit documents in paper format. Such filings must be submitted by: (1) first class mail addressed to the Office of the Secretary of

the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, Attention: Rulemaking and Adjudications Staff; or (2) courier, express mail, or expedited delivery service to the Office of the Secretary, Sixteenth Floor, One White Flint North, 11555 Rockville Pike, Rockville, Maryland, 20852, Attention: Rulemaking and Adjudications Staff. Participants filing a document in this manner are responsible for serving the document on all other participants. Filing is considered complete by first-class mail as of the time of deposit in the mail, or by courier, express mail, or expedited delivery service upon depositing the document with the provider of the service. A presiding officer, having granted an exemption request from using E-Filing, may require a participant or party to use E-Filing if the presiding officer subsequently determines that the reason for granting the exemption from use of E-Filing no longer exists.

Documents submitted in adjudicatory proceedings will appear in NRC's electronic hearing docket, which is available to the public at <http://adams.nrc.gov/ehd>, unless excluded pursuant to an order of the Commission or the presiding officer. Participants are requested not to include personal privacy information, such as social security numbers, home addresses, or home phone numbers in their filings, unless an NRC regulation or other law requires submission of such information. With respect to copyrighted works, except for limited excerpts that serve the purpose of the adjudicatory filings and would constitute a Fair Use application, participants are requested not to include copyrighted materials in their submission.

The Commission will issue a notice or order granting or denying a hearing request or intervention petition, designating the issues for any hearing that will be held and designating the Presiding Officer. A notice granting a hearing will be published in the Federal Register and served on the parties to the hearing.

If a person (other than Curium) requests a hearing, that person shall set forth with particularity the manner in which his interest is adversely affected by this Confirmatory Order and shall address the criteria set forth in 10 CFR 2.309(d) and (f).

If a hearing is requested by a person whose interest is adversely affected, the Commission will issue an order designating the time and place of any hearings. If a hearing is held, the issue to be considered at such hearing shall be whether this Confirmatory Order should be sustained.

In the absence of any request for hearing, or written approval of an extension of time in which to request a hearing, the provisions specified in Section V above shall be final 30 days from the date of this Confirmatory Order without further order or proceedings. If an extension of time for requesting a hearing has been approved, the provisions specified in Section V shall be final when the extension expires if a hearing request has not been received.

For the Nuclear Regulatory Commission



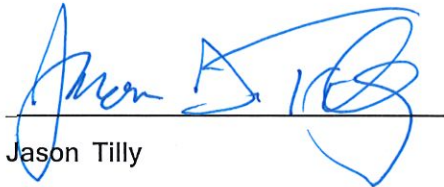
Signed by Giessner, Jack
on 06/13/24

John B. Giessner
Regional Administrator
NRC Region III

Dated this 13th day of June 2024

CONSENT AND HEARING WAIVER FORM

Curium US LLC hereby agrees to comply with the terms and conditions of the Confirmatory Order arising out of an alternative dispute resolution process to be issued relating to enforcement action No. EA-21-055. The Confirmatory Order will be immediately effective upon its issuance. By signing below, Curium US LLC consents to the issuance of the referenced Confirmatory Order, effective immediately upon its issuance and, by doing so, agrees to waive the right to request a hearing on all or any part of the Confirmatory Order.



Jason Tilly
Vice President and General Counsel, North America
Curium US LLC

May 31, 2024

Date