POLICY ISSUE
NOTATION VOTE

RESPONSE SHEET

TO: Carrie M. Safford, Secretary

FROM: Commissioner Crowel

SUBJECT: SECY-26-0032: Report to Congress on Abnormal Occurrences - Fiscal Year 2025

Approved X **Disapproved** ____ **Abstain** ____ **Not Participating** ____

COMMENTS: **Below** X **Attached** X **None** ____

The NRC has a statutory obligation under Section 208 of the Energy Reorganization Act of 1974, as amended (Public Law 93-438), to report annually to Congress on significant health and safety incidents and events known as abnormal occurrences (AOs). I approve the Fiscal Year 2025 Report to Congress on Abnormal Occurrences and the proposed transmittal letter to Congress, subject to the attached edits to improve readability. The FY 2025 AOs reflect the broad spectrum of radiation related risks across medical, industrial, and research settings. These events underscore the continuing importance of strong procedural compliance, comprehensive training, reliable equipment performance, and effective regulatory oversight.

Entered in STAR
Yes X
No ____

Signature

Date 3/19/26

Report to Congress on Abnormal Occurrences

BRC edits

Fiscal Year 2025

U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

ABSTRACT

Commented [A1]: Staff should work with SECY to ensure that page numbers and other formatting issues are resolved.

Section 208 of the Energy Reorganization Act of 1974, as amended (Public Law 93-438), defines an abnormal occurrence (AO) as an unscheduled incident or event that the U.S. Nuclear Regulatory Commission (NRC) determines to be significant from the standpoint of public health or safety. The Federal Reports Elimination and Sunset Act of 1995 (Public Law 104-66) changed the AO reporting frequency from quarterly to annual.

This report on AOs for fiscal year (FY) 2025 describes seven events involving Agreement State licensees and two events involving NRC licensees. These events were identified based on the criteria in the NRC policy statement, "Abnormal Occurrence Reporting," published in the *Federal Register* (FR) on August 12, 2025 (90 FR 38828). Four AOs were medical events, as defined in Title 10 of the *Code of Federal Regulations* Part 35, "Medical Use of Byproduct Material." The remaining five AOs consisted of one loss of an industrial radiography source, two events involving overexposure of declared pregnant radiation workers, one significant breakdown in radiological controls, and one unintended fetal/embryo exposure. No events at commercial nuclear power plants met the criteria for an AO.

Appendix A, "Abnormal Occurrence Criteria," to this report presents the NRC's criteria for identifying AOs. The NRC identified no events during FY 2025 that met the guidelines for inclusion in Appendix B, "Other Events of Interest." One event met the guidelines for inclusion in Appendix C, "Updates on Previously Reported Abnormal Occurrences." Appendix D, "Glossary," defines terms used throughout this report. Appendix E, "Conversion Table," presents conversions commonly used when calculating doses.

The NRC and its licensees review and evaluate operating experience to identify safety concerns. The NRC responds to risk-significant issues through licensing reviews, inspections, enforcement, and enhancements to regulations. In addition, the agency maintains operational data in electronic files for more effective collection, storage, retrieval, and evaluation of event information.

The NRC routinely makes information and records on reportable events at licensed facilities available to the public. The agency also disseminates information through public announcements and special notifications to licensees and other stakeholders. The NRC issues an FR notice describing AOs that occurred in the previous FY at facilities licensed or otherwise regulated by the NRC or an Agreement State. In addition, the NRC promptly informs Congress of any significant events, including AOs.

AGREEMENT STATES

Agreement States are those States that have entered into formal agreements with the NRC, in accordance with section 274 of the Atomic Energy Act of 1954, as amended (AEA), to regulate certain quantities of AEA material at facilities within their borders. Agreement States must maintain programs that are adequate to protect public health and safety and are compatible with the NRC's program for such materials. Currently, there are 40 Agreement States. All Agreement States report event information in accordance with the compatibility criteria in the NRC's Agreement State Program Policy Statement (82 FR 46840; October 6, 2017). The NRC also has procedures for evaluating materials events and identifying those that meet the AO criteria. The NRC uniformly applies the AO criteria (see Appendix A) to events at licensee facilities and to activities involving the use of radioactive material, whether regulated by the NRC or an Agreement State.

INTERNATIONAL INFORMATION

The NRC exchanges information with various international counterparts that regulate nuclear facilities and materials. The agency reviews and considers this international information in its research and regulatory activities and in its assessment of operating experience. Although the NRC may occasionally refer to such information in its AO reports to Congress, the agency reports only domestic AOs.

OTHER EVENTS OF INTEREST

In Appendix B to this report, the NRC offers information about events that do not meet the criteria for AOs but are of interest based on the criteria. The NRC identified no such events of interest that occurred during FY 2025.

UPDATES ON PREVIOUSLY REPORTED ABNORMAL OCCURRENCES

Appendix C includes updates on previously reported AOs that remained open, or for which significant new information became available, during the FY addressed in this report. During this reporting period, one event met the guidelines for inclusion in Appendix C.

NRC25-01 Human Exposure Event at North Kansas City Hospital, Kansas City, Missouri

Criterion I.A.2 of Appendix A to this report provides, in part, that any unintended radiation exposure to an embryo/fetus resulting in a dose equivalent of 50 mSv (5 rem) or more shall be considered for reporting as an AO.

Date and Place—May 10, 2023 (identified on July 25, 2025), Kansas City, Missouri

Nature and Probable Consequences—On July 21, 2023, North Kansas City Hospital (NKCH) (the licensee) reported a potential ~~the possibility that an embryo/fetus had received an~~ unplanned radiation dose to an embryo/fetus. On May 10, 2023, the patient received an administration of~~was administered~~ 4.65 gigabecquerels (GBq) (125.68 mCi) of iodine (I)-131 for a thyroid cancer ablation ~~treatment~~. On July 21, 2023, NKCH was notified that the patient was pregnant at the time of administration, with an estimated conception date of May 6, 2023. An NRC-contracted consultant determined ~~performed an analysis and calculated~~ that the embryo/fetus had received a dose of 333 mSv (33 rem). On February 2, 2024, NKCH reported that the patient had given birth with no complications or noted issues. This event was not identified as a potential AO in the Nuclear Material Events Database (NMED) until July 25, 2025, due to staff oversight, which has since been addressed ~~the subject of~~through corrective action to prevent recurrence.

Cause(s)—This event occurred because existing procedures did not account ~~was caused by procedures not accounting~~ for the detection window associated ~~of~~ with the pregnancy test used before treatment. The hospital procedures required a negative pregnancy test ~~be obtained~~ before ~~the administration~~ administering ~~of~~ I-131, and a negative test result was obtained on May 8, 2023. However, due to the ~~recency of~~very early stage of conception, most pregnancy tests would not yet be capable of detecting pregnancy and would likely yield a ~~be ineffective and provide a~~ false negative result.

Actions Taken to Prevent Recurrence

Licensee—Following this incident, the licensee reviewed its I-131 program and implemented additional preventive measures. NKCH also reviewed and updated patient education material, including pre- and post-procedure ~~material~~information. Additionally, the licensee reviewed applicable policies and procedures, implementing changes as needed. Finally, NKCH validated re-education and competency of all staff involved in I-131 therapies.

NRC—The NRC conducted a reactive inspection, beginning on August 17, 2023, and ending on March 6, 2024. During the inspection, the NRC reviewed the circumstances ~~of~~ surrounding the event and the licensed activities ~~associated with~~involving ~~the~~ the use of I-131 at the facility. The NRC concluded that the licensee had taken ~~sufficient~~ appropriate action to prevent recurrence and did not identify any violations. Additionally, ~~with regard to~~regarding the delayed identification of this event as a potential AO in NMED, the NRC staff has taken action to prevent the recurrence of such delays by arranging for frequent periodic reviews of the database for potential AOs.

This event is closed for the purpose of this report.

AS25-02 Human Exposure Event at Shields Imaging of Massachusetts, Quincy, Massachusetts

Criterion I.A.2 of Appendix A to this report provides, in part, that any unintended radiation exposure to an embryo/fetus resulting in a dose equivalent of 50 mSv (5 rem) or more shall be considered for reporting as an AO.

Date and Place—August 5 to September 5, 2023 (identified on January 28, 2026), Quincy, Massachusetts

Nature and Probable Consequences—On November 30, 2023, Shields Imaging of Massachusetts (the licensee) reported a radiation overexposure to ~~an~~ the embryo/fetus of a declared pregnant worker. The licensee received ~~the~~ an exposure report from Landauer on October 16, 2023, ~~which indicated a reading~~indicating a dose of 57.7 mSv (5.77 rem) to the embryo/fetus during the time period of August 5, 2023, to September 5, 2023. Following this discovery, the worker was removed from clinical duties until after ~~their maternity leave period ended~~completion of her maternity leave.~~.~~ The worker stated that she properly wore her dosimetry badges, that they were never lost nor misplaced, and that no spill or contamination occurred. The licensee reviewed the dosimetry reports for other staff ~~that~~ who worked with the employee ~~but did not note any~~and found no corresponding increases in their radiation exposure~~s~~. The licensee ~~indicated~~ further reported that declared pregnant worker had given birth with~~out no~~ complications or noted issues for either~~to~~ the employee or the embryo/fetus. This event was not identified as a potential AO until January 28, 2026, due to process gaps which have since been addressed ~~the subject of~~through corrective actions to prevent recurrence.

Cause(s)— The cause of this event was determined to be lack of supervision and lack of proper training for technicians. During a special inspection of the licensee conducted from November 11, 2023, to January 12, 2024, the Massachusetts Radiation Control Program noted several deficiencies including failure to calibrate instruments at required intervals. ~~Upon interviewing the licensee's physicists and technicians, the cause of this event was determined to be lack of supervision and lack of proper training for technicians~~.

Actions Taken to Prevent Recurrence

Licensee—Shields Imaging of Massachusetts committed to perform a special management audit with a focus on worker compliance with the radiation safety program and to use Mirion Instadose Badges which would allow the licensee to more promptly access their workers exposures.

State—The Massachusetts Radiation Control Program cited the licensee for two violations: for failing to ensure that the dose equivalent to an embryo/fetus remains within limits, and for failing to ensure adequate precautions were taken to prevent a deceptive exposure.

NRC—With regard to the delayed identification of this event as a potential AO, the NRC staff has taken action to prevent the recurrence of such delays by arranging for frequent periodic reviews of NMED for potential AOs and by augmenting the processes used by the staff for early identification of potential AOs.

This event is closed for the purpose of this report.

AS25-03 Human Exposure Event at Johns Hopkins Medical Imaging, Bethesda, Maryland

Criteria I.A.1(a) and I.A.2 of Appendix A to this report provide, in part, that any unintended radiation exposure to an adult resulting in an annual total effective dose equivalent (TEDE) of 250 mSv (25 rem) and that any unintended radiation exposure to an embryo/fetus resulting in a dose equivalent of 50 mSv (5 rem) or more shall be considered for reporting as AOs.

Date and Place—March 15 to June 27, 2025, Bethesda, Maryland

Nature and Probable Consequences—On June 27, 2025, Johns Hopkins Medical Imaging (the licensee) identified and reported a radiation overexposure event involving a declared pregnant worker. According to dosimetry results, ~~The~~ the positron emission tomography (PET) technician received a whole-body exposure, ~~according to dosimetry results~~, of 299.7 mSv (29.97 rem) from mid-March to June 2025. The worker also received an extremity ~~exposure~~ dose of 63.3 mSv (6.33 rem) ~~over that time~~during that same period. The fetal ~~radiation exposure~~dose was ~~determined~~ calculated to be 148 mSv (14.8 rem). Elevated exposure results were identified in the April and May dosimetry records. The worker's June dosimetry report was then expedited and confirmed to be overexposure. Dosimetry results were further ~~confirmed~~ validated by a reanalysis by the Maryland Department of the Environment. As of January 21, 2026, the state's investigation is still ongoing~~.~~, and ~~Probable~~ probable consequences ~~are currently being~~continue to be evaluated as part of the ongoing investigation.

Cause(s)— No cause has been identified at this time. The licensee initiated a root-cause investigation, which yielded no indication of a spill or spread of contamination at their facility. ~~No cause has been identified at this time.~~

Actions Taken to Prevent Recurrence

Licensee—Following the June 2025 dosimetry results, the worker was promptly notified and removed from work involving radioactive material. The investigation is currently ongoing and, once completed, appropriate actions will be evaluated to prevent recurrence.

State—The Maryland Department of the Environment confirmed dosimetry results in an additional reanalysis. The investigation is currently ongoing and, once completed, appropriate actions will be evaluated to prevent recurrence.

This event is open for the purpose of this report.

II. COMMERCIAL NUCLEAR POWER PLANT LICENSEES

During this reporting period, no event at any commercial nuclear power plant in the United States met the criteria for an AO under Category II, "Commercial Nuclear Power Plant Licensees," in Appendix A.

III. EVENTS AT FACILITIES OTHER THAN NUCLEAR POWER PLANTS AND ALL TRANSPORTATION EVENTS

During this reporting period, five events were identified as AOs based on the criteria in Appendix A under Category III, "Events at Facilities Other Than Nuclear Power Plants and All Transportation Events."

AS25-04 Medical Event at an Unspecified Medical Licensee, Unspecified City, New York[1]

Criteria III.C.1(b) and III.C.2(b)(iii) of Appendix A to this report provide, in part, that a medical event shall be considered for reporting as an AO if it results in an unintended dose from the administration that exceeds, by 10 gray (Gy) (1,000 rad), the intended dose to any organ or tissue (other than a major portion of the bone marrow, the lens of the eye, or the gonads) that would have resulted from delivery of the prescribed dose, dosage, or activity, and the event involves a prescribed dose or dosage that is delivered to the wrong treatment site.

Date and Place—September 15, 2023, Unspecified City, New York

Nature and Probable Consequences—On September 20, 2023, the unspecified medical licensee discovered and reported to New York State an event associated with an yttrium (Y)-90 microsphere administration. On September 15, 2023, during palliative treatment of a liver tumor, the patient received~~, in accordance with the written directive,~~ an administered activity ~~to the right liver lobe~~ of 3.2 GBq (86.5 mCi) to the right lobe, consistent with the written directive and corresponding ~~for~~ to a prescribed dose of 123 Gy (12,300 rad). However, post-therapy imaging ~~revealed~~ demonstrated radiological uptake to both the right and left lobes of the liver. It was subsequently calculated that the left liver lobe had received an unintended dose of 78 Gy (7,800 rad). The patient was informed of the event and the authorized user ~~concluded~~ determined that ~~there was~~ no immediate or expected harm ~~to the patient~~was anticipated, noting ~~that it was likely the patient would require~~that treatment ~~to~~ of the left lobe would likely have been required at a second stage. New York State reported this event to the NRC as an AO on June 6, 2025, ~~once the~~after updated dose ~~information~~ calculations ~~was updated to~~ confirmed ~~the event~~that it met the AO criteria.

Cause(s)—The licensee indicated that diminished flow from the right hepatic artery is the likely cause. Pretreatment mapping did not indicate any delivery to the left lobe; therefore, nontarget treatment delivery was not expected during fluoroscopy.

Actions Taken to Prevent Recurrence

[1] The State of New York Department of Health did not provide the facility name or location for the reported AO and informed the NRC that withholding this information is consistent with New York State Public Health Law, section 2805-l.

NRC25-02 Deficiency in Control and Operation Event at Curium US LLC, Noblesville, Indiana

Criterion III.A.2 of Appendix A to this report provides that a major deficiency in design, construction, control, or operation having significant safety implications that require immediate remedial action shall be considered for reporting as an AO.

Date and Place—April 8, 2025, Noblesville, Indiana

Nature and Probable Consequences—On April 9, 2025, Curium US LLC (the licensee) reported that two workers had been overexposed while performing waste handling and remediation activities. The two had been working in a confined space below a bank of hot cells and, at one point, removed and replaced a bucket of liquid acid waste containing approximately 7.77 TBq (210 Ci) of various rubidium radionuclides from its shielded cask. The workers set the bucket on the floor nearby and continued with remediation activities. Upon exiting the confined space approximately 20 minutes later, the workers noted that their electronic dosimeters read 43.9 mSv (4.39 rem) and 29.2 mSv (2.92 rem). A third radiation worker entered the space and performed a survey. The worker found 2 roentgens (R) per hour (hr) at the entry point, 25 R/hr near the work location, and more than 999 R/hr (the upper limit of the instrument) on contact with the unshielded waste bucket. The actual contact rates were later estimated to have been as high as 5,500 R/hr.

Based on subsequent dose reconstruction, the licensee determined that one individual received occupational doses of 138 mSv (13.8 rem) TEDE and 2,400 mSv (240 rem) Shallow Dose Equivalent (SDE) to the skin of the lower extremities, and another individual received 9.9 rem TEDE between January 1 and April 8, 2025. The licensee acknowledged that the assigned SDE was overly conservative but did not pursue further refinement. No immediate health consequences were reported by either worker, nor are significant health consequences expected.

Cause(s)—~~This~~ The event was caused by multiple failures to follow radiation safety procedures, multiple examples of inadequate radiological surveys and monitoring, inadequate radioactive waste labeling, and inadequate radiation protection program oversight. This event resulted in multiple violations of Federal regulations and license conditions due to a breakdown in the licensee's radiation protection program. ~~These violations included multiple failures to follow radiation safety procedures, multiple examples of inadequate radiological surveys and monitoring, inadequate radioactive waste labeling, and inadequate radiation protection program oversight.~~

Actions Taken to Prevent Recurrence

Licensee—The licensee performed an in-depth investigation and has taken extensive corrections to address each of the identified root causes and contributing factors, such as overhauling its radiological work permitting procedures, improving its training program, and enhancing overall safety culture.

NRC—Following reactive inspection activities to observe and confirm the licensee's restoration of normal operating conditions, Region III chartered a special inspection to develop a clear understanding of the circumstances, assess the adequacy of the licensee's initial response, and evaluate the licensee's dose assessment methods, material control and accountability measures, and radiation protection program. The inspection, completed on site the week of May 19, 2025, found six apparent violations of regulatory requirements. These violations were

APPENDIX B
OTHER EVENTS OF INTEREST

This appendix discusses other events of interest that do not meet the criteria for abnormal occurrences (AOs) in Appendix A, "Abnormal Occurrence Criteria," to this report. The U.S. Nuclear Regulatory Commission (NRC) may determine that events other than AOs may be of interest to Congress and the public and should be included in an appendix to the AO report as "other events of interest." Such events may include, but are not necessarily limited to, events that do not meet the AO criteria but have been perceived by Congress or the public to be of high health or safety significance, have received significant media coverage, or have caused the NRC to increase its attention to or oversight of a program area. They may also include groups of similar events through which licensed materials have entered the public domain in an uncontrolled manner.

No ~~other~~ events of interest occurred during this reporting period.