U.S. NUCLEAR REGULATORY COMMISSION MANAGEMENT DIRECTIVE (MD)

MD 8.1	ABNORMAL OCCURRENCE REPORTING PROCEDURE	DT-18-12
Volume 8:	Licensee Oversight Programs	
Approved By:	Michael Weber Office of Nuclear Regulatory Research	
Date Approved:	May 24, 2018	
Cert. Date:	N/A, for the latest version of any NRC directive or handbook, see the online MD Catalog.	
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EXECUTIVE SUMMARY

Management Directive 8.1, "Abnormal Occurrence Reporting Procedure," is revised to reflect the current process for reporting abnormal occurrences to Congress, organizational changes, and minor editorial changes.

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I. POLICY

- It is the policy of the U.S. Nuclear Regulatory Commission to establish procedures to ensure that an abnormal occurrence (AO) is identified and reported to Congress in compliance with Section 208 of the Energy Reorganization Act of 1974 and the Federal Reports Elimination and Sunset Act of 1995.

- These procedures pertain to events that occur at facilities licensed or otherwise regulated by NRC and Agreement States (i.e., nuclear power plants, fuel cycle facilities, and material licensees). They do not affect the rules, regulations, or other requirements applicable to NRC or Agreement State licensees or certificate holders. These requirements are stated in the *Code of Federal Regulations*, the technical specifications, the license, or the certificate. The procedures within this management directive (MD) do not impose additional requirements on licensees or certificate holders nor affect the Commission's agreements with the Agreement States, as authorized by Section 274 of the Atomic Energy Act of 1954.

- Agreement States provide information to NRC on all reportable material events as a matter of compatibility with NRC regulations. Agreement States file reports for all reportable events following guidance contained in the Office of Nuclear Material Safety and Safeguards (NMSS) (formally known as Federal and State Materials and Environmental Management Programs) Procedure SA-300, “Reporting Material Events.” Subsequently, following guidance in SA-300, Agreement State staff voluntarily prepares and submits to the NRC potential AO descriptions for the subset of those reportable events that were identified as potential AOs.

II. OBJECTIVES

- Establish procedures for the review, selection, and processing of reported events for submittal to the Commission as proposed AOs and other events of interest, for the annual publishing of NUREG-0090, “Report to Congress on Abnormal Occurrences,” and for making the information publicly available after NUREG-0090 is sent to Congress.
- Ensure that the reporting process is properly coordinated and in compliance with statutory requirements and the requirements of the Commission.
- Ensure that NUREG-0090 is prepared by the NRC staff, approved by the Commission, and submitted to Congress via forwarding letters signed by the Chairman.

III. ORGANIZATIONAL RESPONSIBILITIES AND DELEGATIONS OF AUTHORITY

A. Chairman

Submits the annual NUREG-0090 report to Congress via forwarding letters to the President of the Senate and the Speaker of the House.

B. The Commission

1. Approves the AO criteria proposed by the staff.
2. Reviews draft NUREG-0090 for determinations of proposed AOs and other events of interest.
3. Grants final approval of NUREG-0090 to Congress.

C. Executive Director for Operations (EDO)

1. Reviews the AO SECY paper and staff recommendations on proposed AOs and other events of interest, and forwards recommendations to the Commission for final determination.

2. Ensures that Commission comments on staff recommendations are resolved.

3. Ensures that arrangements are made for any required informal or formal Commission briefings regarding potential or proposed AO events.

4. Provides comments and concurrence to the Office of Nuclear Regulatory Research (RES) on the draft NUREG-0090.

D. Director, Office of Congressional Affairs (OCA)

1. Assigns an AO communicator to represent the office on matters pertaining to the AO reporting process. Identifies that individual to RES.

2. Coordinates with all program offices and regional AO coordinators in order to receive information on potential AOs.

3. Coordinates with the program office and regional AO coordinators regarding incidents and events identified as potential AOs that are receiving congressional interest.

4. Notifies the program office and regional AO coordinators, via e-mail, of incidents and events identified as potential AOs that are receiving congressional interest.

5. Provides assistance to the program office and regional AO coordinators for Commission briefings and in preparing responses to Commission questions on congressional outreach.

6. Coordinates with the program office and regional AO coordinators for external outreach on potential AOs that are receiving congressional interest. Informs the RES AO coordinator, via e-mail, of such outreach.

7. Receives proposed AO descriptions from the RES AO coordinator.

8. Provides comments and concurrence to RES on the draft NUREG-0090.

9. Provides copies of NUREG-0090 to the Speaker of the House; the President of the Senate; the Chairman and Ranking Members of the Senate Committee on the Environment and Public Works and its Subcommittee on Clean Air and Nuclear Safety; the House Committee on Energy and Commerce and its Subcommittees on Energy and on Environment; and the Energy and Water Development Subcommittees of the House and Senate Appropriations Committees.

E. General Counsel, Office of the General Counsel (OGC)

1. Provides assistance to the program office and regional AO coordinators on processing potential AOs or proposed AOs requiring interaction with Agreement State or licensee attorneys.

2. Provides no legal objection determination and comments to RES on the draft NUREG-0090.

3. Provides no legal objection determination on changes to the AO reporting criteria, reporting procedures, and guidelines for selecting other events of interest.

4. Provides comments and concurrence on the draft *Federal Register* notice that announces the availability of NUREG-0090, ensuring that the format and content is consistent with Office of the Federal Register requirements.

F. Director, Office of Public Affairs (OPA)

1. Assigns an AO communicator to represent the office on matters pertaining to the AO reporting process. Identifies that individual to RES.

2. Responds to media inquiries about the annual AO report or individual events that may qualify as AOs and coordinates with relevant program office and regional AO coordinators as needed.

3. Provides assistance when requested to the program office and regional AO coordinators for Commission briefings and responses to Commission questions on media outreach.

4. Provides assistance to the program office and regional AO coordinators in developing, as needed, communication plans, talking points, or other public and media messaging.

5. Provides comments and concurrence to RES on the draft NUREG-0090.

6. Produces a press release on the annual report to Congress and coordinates issuance of the release with the RES AO program coordinator and OCA.

G. Office of the Secretary (SECY)

1. Receives and circulates Commissioner votes and comments on the SECY paper that forwards NUREG-0090; analyzes and synthesizes Commissioner comments and identifies substantive issues requiring resolution among Commissioners; proposes solutions and coordinates efforts to resolve differences with the objective of establishing a majority position; and prepares documentation [Staff Requirements

Memoranda (SRM)] to implement Commission decisions and identify other requirements accruing from Commissioner voting on the AO SECY paper.

2. Holds meetings for Commissioner Assistants to review the status of the AO SECY paper, identifies problem areas, seeks resolution of pending issues, and establishes priorities for Commission action on the AO SECY paper.

3. Reviews, processes, and dispatches the agency's congressional correspondence on NUREG-0090, in conjunction with OCA.

4. Reviews and transmits the Federal Register notice of availability for NUREG-0090 (not including the appendices).

H. Director, Office of Nuclear Regulatory Research (RES)

1. Implements this MD to ensure expeditious processing of reportable events that meet the AO criteria (see Section III of this handbook for AO criteria and guidelines).

2. Assigns an AO coordinator to represent the office on matters pertaining to the AO reporting process.

3. Coordinates changes to the AO reporting criteria, reporting procedures, and guidelines for selecting other events of interest with the program office and regional AO coordinators. Provides changes to OGC to obtain no legal objection determination. Provides changes to the Commission for approval.

4. Coordinates with the program office and regional AO coordinators regarding incidents and events identified as potential AOs that are receiving interest from the EDO.

5. Coordinates with the program office and regional AO coordinators regarding other events of interest that warrant inclusion in NUREG-0090.

6. Coordinates with the AO communicators regarding potential AOs that are receiving congressional or media interest or require congressional or media outreach.

7. Receives potential AO descriptions and other events of interest from the program office and regional AO coordinators.

8. Confirms potential AOs as proposed AOs by verifying that potential AOs meet the AO criteria and the event descriptions contain information specified in Section 208 of the Energy Reorganization Act of 1974.

9. Reviews proposed AO descriptions and other events of interest to ensure that the document contains non-sensitive, unclassified, and non-safeguards information.
10. Provides proposed AO descriptions to the AO communicators.
11. Prepares the draft NUREG-0090 using the proposed AO descriptions and other events of interest received from the program office and regional AO coordinators, following the procedure described in Sections II.B and II.C of this handbook.
12. Provides a briefing to the EDO on the draft NUREG-0090 prior to submitting the report for office concurrence.
13. Receives comments and concurrence on the draft NUREG-0090 from the EDO, OGC, OPA, Office of Administration (ADM), Office of Enforcement (OE), NMSS, Office of New Reactors (NRO), Office of Nuclear Reactor Regulation (NRR), Office of Nuclear Security and Incident Response (NSIR), Office of Congressional Affairs (OCA), and the regions.
14. Resolves comments on the draft NUREG-0090 received from the Commission, the EDO, OCA, OGC, OPA, ADM, OE, NMSS, NRO, NRR, NSIR, and the regions.
15. Receives final Commission approval of the draft NUREG-0090.
16. Provides NUREG-0090 to the ADM for publishing and internal distribution.
17. Provides copies of NUREG-0090 to OCA for transmittal to Congress.
18. Includes updated information on open AOs in the next NUREG-0090.

I. Director, Office of Enforcement (OE)

1. Coordinates with the program office and regional AO coordinators on enforcement actions for potential and proposed AOs.
2. Provides comments and concurrence to RES on the draft NUREG-0090.

J. Director, Office of New Reactors (NRO)

1. Establishes internal written procedures for the expeditious review, identification, and processing of potential AOs and other events of interest for new nuclear power reactors that are being licensed and constructed under 10 CFR Part 52.
2. Assigns an AO coordinator to represent the office on matters pertaining to the AO reporting process. Identifies that individual to RES.

3. Submits to RES potential AO descriptions and other events of interest.
4. Coordinates with RES and Region II regarding incidents and events involving design or construction of new reactors, identified as potential AOs that are receiving interest from the EDO.
5. Coordinates with the AO communicators regarding external outreach for incidents and events identified as potential AOs that are receiving congressional or media interest.
6. Provides additional information to RES on proposed AOs or other events of interest in response to Commission questions.
7. Provides comments and concurrence to RES on the draft NUREG-0090.

K. Director, Office of Nuclear Material Safety and Safeguards (NMSS)

1. Establishes internal written procedures for the expeditious review, identification, and processing of potential AOs and other events of interest for operating materials facilities, facilities undergoing decommissioning, operating fuel cycle facilities, facilities licensed to possess greater than critical mass of special nuclear material (SNM), transportation of radioactive materials, and independent spent fuel storage installations (ISFSIs).
2. Assigns an AO coordinator to represent the office on matters pertaining to the AO reporting process. Identifies that individual to RES.
3. Submits to RES potential AO descriptions and other events of interest.
4. Coordinates with RES and the regions regarding incidents and events identified as potential AOs that are receiving interest from the EDO.
5. Coordinates with the AO communicators regarding external outreach for incidents and events identified as potential AOs that are receiving congressional or media interest.
6. Provides additional information to RES on proposed AOs or other events of interest in response to Commission questions.
7. Provides comments and concurrence to RES on the draft NUREG-0090.

L. Director, Office of Nuclear Reactor Regulation (NRR)

1. Establishes internal written procedures for the expeditious review, identification, and processing of potential AOs and other events of interest for commercial nuclear power reactors and for test and research reactors.

2. Assigns an AO coordinator to represent the office on matters pertaining to the AO reporting process. Identifies that individual to RES.

3. Submits to RES potential AO descriptions and other events of interest.

4. Communicates with the regions regarding incidents and events identified as potential AOs that are receiving interest from the EDO.

5. Communicates with the AO communicators regarding external outreach for incidents and events identified as potential AOs that are receiving congressional or media interest.

6. Provides additional information to RES on proposed AOs or other events of interest in response to Commission questions.

7. Provides comments and concurrence to RES on the draft NUREG-0090.

M. Director, Office of Nuclear Security and Incident Response (NSIR)

1. Establishes internal written procedures for the expeditious review, identification, and processing of potential AOs and other events of interest involving security-related matters.

2. Assigns an AO coordinator to represent the office on matters pertaining to the AO reporting process. Identifies that individual to RES.

3. Coordinates with the program office and regional AO coordinators regarding potential AO descriptions and other events of interest involving security-related matters.

4. Submits to RES potential AO descriptions and other events of interest involving security-related matters.

5. Coordinates with the program office and regional AO coordinators regarding security-related incidents and events identified as potential AOs that are receiving interest from the EDO.

6. Coordinates with RES, program offices, and regional coordinators regarding events transmitted to the International Atomic Energy Agency (IAEA), International Nuclear and Radiological Event Scale (INES) as potential Level 3 events (possibly serious

incidents on the INES scale) and submits descriptions to the RES AO coordinator as other events of interest.

7. Coordinates with the AO communicators, program offices, and regional AO coordinators regarding external outreach, on security-related incidents and events identified as potential AOs that are receiving congressional or media interest.

8. Provides additional information to RES on proposed AOs or other events of interest involving security-related matters, in response to Commission questions.

9. Provides comments and concurrence to RES on the draft NUREG-0090.

N. Regional Administrators (RAs)

1. Establish internal written procedures for the expeditious review, identification, and processing of potential AOs and other events of interest for operating materials facilities, facilities licensed to possess greater than critical mass of SNM, operating nuclear power reactors, new reactors and fuel facilities under construction, and for licensed facilities undergoing decommissioning.

2. Assign an AO coordinator to represent their region on matters pertaining to the AO reporting process. Identify that individual to RES.

3. Submit to RES potential AO event descriptions and other events of interest.

4. Coordinate with the program office and AO coordinators regarding incidents and events identified as potential AOs that are receiving interest from the EDO.

5. Communicate with the AO communicators regarding external outreach for incidents and events identified as potential AOs that are receiving congressional or media interest.

6. Provide additional information to RES on proposed AOs or other events of interest in response to Commission questions.

7. Provide comments and concurrence to RES on the draft NUREG-0090.

O. Office Representatives of the Abnormal Occurrence (AO) Working Group

RES leads the working group, whose members comprise AO coordinators and communicators. NMSS, NRO, NRR, NSIR, RES, and the regions each designate an AO coordinator to represent their office or region on matters pertaining to the AO reporting process. OCA and OPA each designate an AO communicator to represent their office on

matters pertaining to the AO reporting process. The AO working group conducts internal and external outreach to stakeholders on potential AOs.

1. RES AO Coordinator (Lead Coordinator)

   (a) Serves as lead coordinator for the working group.

   (b) Conducts quarterly AO working group meetings to discuss updates to the proposed AO descriptions, updates to previously reported AOs, and other events of interest.

   (c) Develops and coordinates the annual issuance of NUREG-0090.

      (i) Receives potential AO descriptions from the program office and regional AO coordinators.

      (ii) Verifies (1) that the potential AO meets the AO criteria, and (2) that the potential AO descriptions contain the information specified in Section 208 of the Energy Reorganization Act of 1974, such as the nature and probable consequences of the event. Upon verification, the potential AO is designated as a proposed AO event.

      (iii) Provides a copy of the proposed AO descriptions to the AO communicators. The proposed AO descriptions are included in the draft NUREG-0090.

      (iv) Submits the draft NUREG-0090 for office concurrence, EDO concurrence, and Commission approval of the proposed AO event descriptions as final AO.

      (v) Prepares and submits the draft Federal Register notice for ADM review and concurrence.

   (d) May conduct additional meetings with the AO working group to discuss topics related to the AO reporting process, including revisions to the AO criteria.

2. AO Coordinators

   (a) Determine whether events are potential AOs using the AO criteria.

   (b) Communicate with internal stakeholders (such as the Commission, as necessary, the EDO, the DEDOs, office directors, division directors, and regional counterparts).

   (c) Provide a potential AO description to the RES AO coordinator.

3. AO Communicators

   (a) Coordinate with the appropriate program office or regional AO coordinator in order to obtain any necessary additional information on potential AOs.

   (b) Conduct early outreach, as needed, to Congress, the public, and the media, with assistance from the appropriate program or regional office.

   (c) Coordinate with the appropriate program office or regional AO coordinator to develop communication tools to provide to external stakeholders on potential AOs or other events of interest.

IV. PROPOSING EVENTS FOR EVALUATION AS POTENTIAL ABNORMAL OCCURRENCES OR CHANGES TO THE ABNORMAL OCCURRENCE REPORTING PROCEDURE

A. Proposing Events

NRC program offices and regions may propose an event to any office or regional AO coordinator for evaluation as a potential AO. Any such event, together with the reasons why it does or does not appear to meet the AO criteria, should be submitted to RES for review and processing.

B. Proposing Changes

NRC program offices and regions may contact the RES AO coordinator and recommend changes in the AO reporting program; the review, selection, and processing procedures; or the method of dissemination to the public or Congress. Proposed changes to the AO criteria and reporting procedures are forwarded to the Commission for review and approval.

V. APPLICABILITY

The policy and guidance in this directive and handbook apply to all NRC employees.

VI. DIRECTIVE HANDBOOK

Directive Handbook 8.1 contains information on the review, selection, and processing of potential AOs and the AO criteria and guidelines for other events of interest.

VII. DEFINITIONS

Potential Abnormal Occurrence

Event categorized as the result of an initial assessment of the event, by a program office or regional AO coordinator, using the AO criteria.

Proposed Abnormal Occurrence

Event categorized as the result of a second assessment of a potential AO, by the RES AO coordinator, using the AO criteria and Section 208 of the Energy Reorganization Act of 1974.

Final Abnormal Occurrence

Event categorized as the result of Commission approval of proposed AOs.

VIII. REFERENCES

Code of Federal Regulations

Title 10, "Energy."

Federal Register

Federal Register, Vol. 62, No. 74, U.S. Government Printing Office, "Abnormal Occurrence Reports: Implementation of Section 208 Energy Reorganization Act of 1974; Revision to Policy Statement," April 17, 1997.

Federal Register, Vol. 82, No. 189, U.S. Government Printing Office, "Abnormal Occurrence Reports: Implementation of Section 208 Energy Reorganization Act of 1974; Revised to Policy Statement," October 2, 2017, available at https://www.federalregister.gov/documents/2017/10/02/2017-21043/abnormal-occurrence-reports.

Nuclear Regulatory Commission Documents

"Agreement State Program Policy Statement," October 18, 2017, 82 FR 48535.

Office of Nuclear Material Safety and Safeguards (NMSS) (formally known as Federal and State Materials and Environmental Management Programs) Procedure SA-300, "Reporting Material Events" 3/27/2013 (ML13053A346).

"Communication Plan Abnormal Occurrence Events Reporting," July 29, 2008, available at ADAMS Accession No. ML081210111.

Management Directives

9.10, "Organization and Functions, Office of the Secretary."

9.21, "Organization and Functions, Office of Administration."

NUREG-0090, Vol. 39, "Report to Congress on Abnormal Occurrences: Fiscal Year 2016," May 2017, available at ADAMS Accession No. ML17125A084.

SECY-15-0040, "Proposed Revisions to Policy Statement on Reporting Abnormal Occurrence Criteria" March 19, 2015, available at ADAMS Accession No. ML12166A091.

United States Code

Atomic Energy Act of 1954, Section 274 (42 U.S.C. 2011 et seq.).

Energy Reorganization Act of 1974, Section 208, Pub. L. 93-438 (42 U.S.C. 5848).

Federal Reports Elimination and Sunset Act of 1995 (Pub. L. 104-66).

Freedom of Information Act (5 U.S.C. 552).

Privacy Act of 1974 (5 U.S.C. 552a).

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I. ABNORMAL OCCURRENCE (AO) WORKING GROUP

A. Members

The agencywide working group is comprised of—

1. A coordinator from the Office of Nuclear Regulatory Research (RES) who will lead the working group;
2. Abnormal Occurrence (AO) coordinators from the Offices of Nuclear Material Safety and Safeguards (NMSS), Nuclear Reactor Regulation (NRR), New Reactors (NRO), Nuclear Security and Incident Response (NSIR), and the regional offices; and
3. AO communicators from the Office of Congressional Affairs (OCA) and the Office of Public Affairs (OPA).

B. Responsibilities

1. Identify, propose, verify, and designate AOs.
2. Meet quarterly to discuss updates to the proposed AO descriptions, updates to previously reported AOs, and other events of interest.
3. Prepare and issue NUREG-0090, "Report to Congress on Abnormal Occurrences," annually.
4. Update the AO reporting process, including revisions to the AO criteria.
5. Support the lead program office in management briefings and public meetings regarding AO.

II. REVIEW, SELECTION, AND PROCESSING OF POTENTIAL ABNORMAL OCCURRENCE (AO)

A. Review of Reported Events

1. NMSS, NRR, NRO, NSIR, and the regional offices review reported events to identify potential AOs and other events of interest. These offices will—

   (a) Review licensee event reports submitted in accordance with 10 CFR 50.55, 10 CFR 50.73, event notifications submitted in accordance with 10 CFR 50.72, regional morning reports, regional preliminary notifications, NRC inspection reports, and Agreement State event reports.

   (b) Review nuclear materials licensee event reports submitted in accordance with 10 CFR Parts 20, 21, 30 through 37, 39, 40, 50, 55, 61, 70, 71, 72, or 76.

   (c) Monitor international events. Review and identify international events related to both nuclear power plants and radiological materials for possible applicability to U.S. regulated facilities.

   (d) Review the daily events notification document, which is distributed each day by the NRC Operations Center to the Commission, the Executive Director for Operations (EDO) and the Deputy Executive Directors for Operations (DEDOs), NMSS, NRO, NRR, NSIR, OCA, OPA, and the regions. The events notification document lists all events that have occurred, typically within a 24-hour period, at NRC- and Agreement State-licensed facilities.

      (i) The AO coordinators use the events notification document to follow-up on events that have occurred in their specific program area.

      (ii) The AO communicators use the events notification document to prepare for external outreach, as necessary, with Congress, the pubic, and the media.

2. Program Offices

   Each NRC office reviews event notification document for its specific program area to identify events as potential AOs or other events of interest.

   (a) NMSS has primary responsibility for the review of materials events, including events involving industrial, commercial, academic, and medical uses of radioactive material, uranium recovery activities, the decommissioning of previously operating nuclear facilities and power plants, fuel cycle storage, transportation, and disposal of high-level and low-level radioactive waste and spent nuclear fuel, and the transportation of radioactive materials regulated under the Atomic Energy Act. Additionally, NMSS has

primary responsibility for the review of events reported by the Agreement States. In addition, NMSS reviews all reportable material events in the nuclear material events database (NMED) that have been reported by NRC and Agreement State licensees.

(b) NRO has primary responsibility for the review of events that are related to new reactors being licensed and constructed pursuant to regulations in 10 CFR Part 52.

(c) NRR has primary responsibility for the review of operating nuclear reactor events.

(d) The regional offices review materials, uranium recovery, fuel cycle, and nuclear reactor events.

(e) NSIR coordinates with NMSS, NRO, NRR, and the regional offices for events, identified as potential AOs, involving security-related issues.

B. Identification of Potential Abnormal Occurrences

1. Criteria

Potential AOs are selected using the AO criteria published in the *Federal Register* on October 2, 2017 (82 FR 45907) available at https://www.federalregister.gov/documents/2017/10/02/2017-21043/abnormal-occurrence-reports, may involve either an event or a condition.

2. Assessment of NRC Licensee Event

(a) The program office or regional AO coordinators will assess an event to determine if it meets the AO criteria. If an event meets the AO criteria, the program office or regional AO coordinator will develop a potential AO description. The potential AO description will include the applicable AO criteria and contain the information specified in Section 208 of the Energy Reorganization Act of 1974, such as the nature and probable consequences of the event.

(b) The program office or regional AO coordinators coordinate with the AO communicators regarding incidents or events, identified as potential AOs. The AO communicators notify the program office or regional AO coordinators of incidents and events, identified as potential AOs that are receiving congressional and/or media interest. The AO communicators will conduct external outreach, as necessary, with Congress, the public, and the media, on potential AOs.

(c) The RES AO coordinator coordinates with the program office and regional AO coordinators regarding incidents and events, identified as potential AOs that are receiving interest from the EDO.

(d) NSIR can provide assistance to NMSS, NRO, NRR, and the regional offices in preparing potential AO descriptions involving security-related matters.

3. Assessment of Agreement State Licensee Event

Agreement States screen events to identify potential AOs and prepare potential AO descriptions. The Regional State Agreement Officer will notify the Agreement States of any additional events identified as potential AOs as a result of NRC staff review of Event Notifications (EN) or NMED. After the Regional State Agreement Officer identifies Agreement State events as potential AOs, the Agreement States prepare potential AO descriptions and submit them to the NRC via the Regional State Agreement Officer.

4. Lead Office for Potential AOs

(a) Either NSIR, NMSS, NRO, or NRR will coordinate with the region preparing the potential AO description; the determination of lead office will depend on which program office is most knowledgeable of the event.

(b) The regional offices will prepare the potential AO descriptions within their respective regions for events identified as potential AOs.

5. Commission Direction

The Commission provided direction in the staff requirements memorandum (SRM) on SECY-96-193, “Abnormal Occurrence Reports: Implementation of Section 208 Energy Reorganization Act of 1974; Final Policy Statement.” The SRM provided in part, that “The staff should file incident information on potential AOs in the public document rooms (PDRs) as soon as possible. In following this direction, the staff should place already existing documents on these incidents in the PDRs and identify the incident as [a] potential AO.” Thus, following the Commission's direction, the offices that prepare the potential AO descriptions should make such documentation public.

C. Guidance for Preparing Potential AO Descriptions and Other Events of Interest

1. General

(a) Each AO description should be a clear, concise, and accurate report of what happened, as required by Section 208 of the Energy Reorganization Act of 1974. Also, AO descriptions must be consistent with the provisions of the Privacy Act and the Freedom of Information Act.

(b) Do not cite references in the event descriptions.

2. Format for Event Descriptions

   (a) First Paragraph

   State the AO criteria for the event by citing the appropriate section of Appendix A of NUREG-0090, which contains all of the criteria.

   (b) Second Paragraph: “Date and Place”

   State the date and place, as required by Section 208 of the Energy Reorganization Act of 1974.

   (c) Third Paragraph: “Nature and Probable Consequences”

   Briefly explain what happened and what the consequences were, as required by Section 208 of the Energy Reorganization Act of 1974. A statement as to whether or not all regulatory requirements have been met should be included in the description. In addition, if the description is of a medical event, statements in the description should describe:

   (i) Whether the patient and the referring physician were notified of the event, and

   (ii) The medical significance of the event to the patient.

   (d) Next Marked Paragraph: “Cause(s)”

   Briefly explain what caused the event, as required by Section 208 of the Energy Reorganization Act of 1974.

   (e) Stand-Alone Heading: “Actions Taken To Prevent Recurrence” (“Licensee”/“NRC”/“Agreement State”)

   Briefly explain what actions were taken to prevent recurrence, as required by Section 208 of the Energy Reorganization Act of 1974. For Agreement States, briefly explain what actions were taken to prevent recurrence by the Agreement State and the Agreement State licensee.

   (f) Last Paragraph

   State whether the event is closed or open for the purpose of this report as described in Section IV below.

3. Other Events of Interest (NUREG-0090, Appendix B)

   (a) The guidelines for including events as "Other Events of Interest" were provided by the Commission in the SRM on SECY-98-175, "Proposed Guidelines for Appendix C, Other Events of Interest, to the Abnormal Occurrence Report to Congress," dated September 4, 1998, and state that—

   The Commission may determine that event 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 necessary limited to, events that do not meet the AO criteria but that have been perceived by Congress or the public to be of high health and safety significance, have received significant media coverage, or have caused the NRC to increase its attention to or oversight program area, or a group of similar events have resulted in license materials entering the public domain in an uncontrolled manner. "Significant media coverage" may include, but is not limited to, news and information carried by the news media and outlets, and Congressional inquiries. Recommendations to include other events are typically agreed upon by senior NRC officials including the Commission in accordance with the MD.

   (b) For example, AO NUREG–0090, Volumes 36, 38, and 39 describe several events in Appendix C of the respective volumes.

      (i) Volume 36 identified four "Other Events of Interest" including:

      - San Onofre Nuclear Generating Stations, Unit 3: Steam Generator Tube Leaks;
      - Arkansas Nuclear One, Unit 1: Dropped Electrical Generator Stator Resulting in Unit 1 Loss of Offsite Power and Unit 2 Reactor Trip and Partial Loss of Offsite Power;
      - Nuclear Facilities Response during Hurricane Sandy; and,
      - Honeywell Metropolis Works: Vulnerability of Feed Materials Building Process Equipment to Seismic or Tornado Events and Inadequacy of Emergency Response Plan.

      (ii) Volume 38 identified three "Other Events of Interest" including:

      - a release of hydrogen fluoride at the Honeywell Metropolis Works Facility, a conversion facility located in Metropolis, Illinois;
      - an event involving human exposure at International Isotopes Incorporated, Idaho Falls, Idaho; and

- a dual state (Oklahoma-Texas) contamination event from a generator operated by Tracerco at the University of Tulsa, Oklahoma.

(iii) Volume 39 identified one “Other Events of Interest.” This event was on the Creusot Forge Documentation Anomalies and Carbon Segregation. The full narrative for this event is in Exhibit 2 of this handbook.

(iv) The full narratives for Volume 36, 38, and 39 events can be found at https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0090.

4. Updates of Previously Reported Abnormal Occurrences

If the reporting requirements of Section 208 of the Energy Reorganization Act of 1974 have been met for the AO, then a statement such as “this event is closed for the purpose of this report” should be included in the last paragraph to indicate that the event has been closed. However, the AO will be kept open if there is a reasonable expectation that currently unavailable information will be obtained shortly. Also, if significant new information becomes available for a closed AO at a later date, the new information will be reported under “Updates of Previously Reported Abnormal Occurrences” (NUREG-0090, Appendix C).

D. Processing of Potential Abnormal Occurrences as Proposed Abnormal Occurrences

1. RES sends quarterly requests for potential AO descriptions and other events of interest to the AO working group. Requests for quarterly potential AO descriptions and other events of interest may be combined (i.e., information may be requested for the first and second quarter in one request), depending on the frequency of incidents or events identified as potential AOs. After a program office or regional AO coordinator develops a potential AO or other event of interest description, it is submitted to the RES AO coordinator.

2. The RES AO coordinator receives potential AO descriptions and other events of interest from the program office or regional AO coordinators, or from the Agreement States, submitted by either a regional AO coordinator or by a Regional State Agreements Officer. The RES AO coordinator will conduct a second assessment of the potential AO event description to ensure that it contains the applicable AO reporting criteria and satisfies the reporting requirements of Section 208 of the Energy Reorganization Act of 1974. The RES AO coordinator will confirm the potential AO as a proposed AO after completing this second assessment.

3. The RES AO coordinator provides a copy of the proposed AO descriptions to the AO communicators. In addition, the RES AO coordinator uses the proposed AO descriptions to develop the draft NUREG-0090 report. The RES AO coordinator submits the draft NUREG-0090 report to the AO working group and the Agreement States, for review and concurrence. The draft NUREG-0090 report includes—

   (a) Descriptions of the proposed AO;

   (b) AO criteria (Appendix A);

   (c) Other events of interest (Appendix B); and

   (d) Updates of previously reported AOs (Appendix C).

4. The RES AO coordinator coordinates resolution of comments received from the AO working group and the Agreement States, and submits the draft NUREG-0090 report to the EDO for review, concurrence, and submission to the Commission.

5. Formal disagreements about proposed AOs are resolved through the AO working group and, when necessary, by NRC managers. If an impasse occurs among NRC offices as to whether a proposed AO or an event of interest should be included in NUREG-0090 or if other offices disagree with RES's final determination, RES will submit supporting documentation and a RES recommendation to the EDO for resolution.

E. Commission Determination of Final AOs

1. The EDO submits the draft NUREG-0090 report to the Commission, via the Secretary of the Commission (SECY), as a SECY-numbered document. Through an SRM, the Commission submits its comments to RES, along with its approval of the draft NUREG-0090 report as final AOs.

2. RES incorporates the Commission's comments as stated in the SRM, oversees the printing of the final NUREG-0090 report, prepares a *Federal Register* notice (FRN) announcing its publication, and prepares the Chairman's letters forwarding the final NUREG-0090 report to Congress. The Chairman sends a letter to the President of the Senate and another identical letter to the Speaker of the House, along with a copy of the final NUREG-0090 report. In addition to the President of the Senate and the Speaker of the House, OCA submits a copy of the final NUREG-0090 report to the Chairman and Ranking Members of the Senate Committee on the Environment and Public Works and its Subcommittee on Clean Air and Nuclear Safety; the House Committee on Energy and Commerce and its Subcommittees on Energy and on Environment; and the Energy and Water Development Subcommittees of the House and Senate Appropriations Committees.

F. Examples of Final AO Descriptions, Updates of Previously Reported Abnormal Occurrences, and Other Events of Interest

1. Examples of Final AO Event Reports

   Two examples are shown in Exhibit 1 of acceptable AO event descriptions meeting the AO criteria. These events were reported in NUREG-0090, Vol. 39, "Report to Congress on Abnormal Occurrences: Fiscal Year 2016*."*

2. Example of NUREG-0090, Appendix B, "Other Events of Interest"

   One example of an acceptable NUREG-0090, Appendix B description is shown in Exhibit 2 using the guidelines that were provided by the Commission in the SRM on SECY-15-0040. It should be noted that each NUREG-0090, Appendix B description should include a brief discussion of the merits of including it in the report.

3. Example of NUREG-0090, Appendix C, "Updates of Previously Reported Abnormal Occurrences"

   One example of an acceptable NUREG-0090, Appendix C description is shown in Exhibit 3. This update was reported in NUREG-0090, Vol. 39, "Report to Congress on Abnormal Occurrences: Fiscal Year 2016."

III. ABNORMAL OCCURRENCE CRITERIA

An accident or event will be considered an AO if it involves a major reduction in the degree of protection of public health or safety. This type of incident or event would have a moderate or more severe impact on public health or safety and could include, but need not be limited to, the following:

1. Moderate exposure to, or release of, radioactive material licensed by or otherwise regulated by the Commission;

2. Major degradation of essential safety-related equipment;

3. Major deficiencies in design, construction, or use of management controls for facilities or radioactive material licensed by or otherwise regulated by the Commission; or

4. Theft, Diversion, or Loss of Licensed Material; Sabotage; or Security Breach.

EXHIBITS

Exhibit 1 Examples of Final Abnormal Occurrence Event Descriptions

- **AS16-01 Human Exposure Event at Mistras Group, Deer Park, Texas**

Criterion I.A.1, “For All Licensees,” of Appendix A to this report provides, in part, that a human exposure event shall be considered for reporting as an AO if it results in a shallow dose equal to or greater than 2,500 mSv (250 rem) to the skin or extremities.

Date and Place — May 11, 2016, Deer Park, Texas

Nature and Probable Consequences — Mistras Group reported a radiation overexposure to a radiographer during operations on May 11, 2016. The source guide tube and collimator fell from a jig it had been taped to while the 1,237.6-gigabecquerel (GBq) (33.4-curie (Ci)) iridium (Ir) -192 source was extended. The radiographer’s dosimetry was sent for immediate processing. Mistras Group re-enacted the incident using video and an empty exposure device with attachments to represent what the radiographer had done. The reenactment demonstrated that the radiographer had placed his left hand on the collimator and inserted his middle finger into its port hole. The radiation safety officer (RSO) calculated a dose of 467 centisievert (cSv) (roentgen equivalent man (rem)) to the finger. Dosimetry badge results revealed a whole-body dose of 9.37 mSv (937 millirem (mrem)); that badge was worn for 8 days during the month. The radiographer’s finger appeared to show slight reddening; otherwise, no visible effects have been observed. Bloodwork showed no unusual results.

Cause(s) — The radiographer failed to retract the source into the exposure device before he walked to the end of the guide tube, picked it up, and taped it back onto the jig.

Actions Taken To Prevent Recurrence

Licensee — The corporate RSO sent out an alert to remind personnel to be safety-conscious. The radiographer involved was disciplined.

State — The Texas Department of State Health Services investigated the incident and concurred with the exposure results for the radiographer.

This event is closed for the purpose of this report.

- **NRC16-03 Westinghouse Columbia Fuel Fabrication Facility (CFFF), Columbia, SC**

Criterion III.A.2 of Appendix A to this report provides that an event at a facility other than a nuclear power plant or a transportation event shall be considered for reporting as an AO report if it results in a major deficiency in design, construction, control or operation having significant safety implications that require immediate remedial action.

Date and Place — July 14, 2016, Columbia, SC

Nature and Probable Consequences — On July 14, 2016, the Westinghouse Electric Corporation (licensee) reported that during annual cleaning of the S-1030 scrubber at the Westinghouse Columbia Fuel Fabrication Facility, an excessive amount of low enriched uranium was found in the inlet ducting to the scrubber, potentially exceeding the uranium mass limit established for nuclear criticality safety. The facility fabricates low enriched uranium fuel assemblies for commercial nuclear power plants. The S-1030 scrubber removes gases and particulates from various exhaust streams associated with the uranium conversion process. The licensee conducted multiple inspections and cleanouts and quantified the amount of uranium that had built up in different sections of the scrubber. Approximately 87 kilograms of uranium was initially found in the inlet ducting, exceeding the nuclear criticality safety mass limit of 29 kilograms. An additional 172 kilograms was cleaned from the scrubber internals, exceeding its mass limit of 21 kilograms. No nuclear criticality safety controls, such as moderator limits or favorable geometry restrictions, were present. As a result, the safety margin available to preclude an inadvertent criticality was substantially degraded. This represented a major deficiency in control having significant safety implications requiring immediate remedial action. Specifically, the event called into question the licensee's controls for nuclear criticality safety associated with wet scrubbers and non-favorable geometry components and justified the immediate shut down of the conversion process. An actual nuclear criticality did not occur and there were no health consequences to the public, workers, or impact to the environment.

Cause(s) — Configuration management controls were not effective in managing increased uranium accumulation in the scrubber over an extended period of time when design and operational changes to the system were made. Operating experience and the corrective action processes were not effectively used to pursue the actions needed to detect, estimate, and mitigate deposited uranium in the scrubber. Organizational safety culture weaknesses contributed to invalid assumptions in criticality safety evaluations and the failure to scrutinize the content of the evaluations and as-found conditions in the scrubber with a questioning attitude.

Management did not ensure the organization had sufficient procedures and training to recognize and respond to deviations from the safety basis described in the criticality safety evaluation. Furthermore, the scope of licensee audits did not provide a comprehensive review of the Nuclear Criticality Safety Program.

Actions Taken To Prevent Recurrence

Licensee — The conversion process was shut down and the licensee performed extent of condition and root cause evaluations. On August 9, 2016, Westinghouse submitted a letter committing to take actions to ensure that the causes of the uranium buildup were adequately identified and evaluated and that appropriate corrective actions were implemented to improve the performance of the nuclear criticality safety program.

NRC — On July 28, 2016, the NRC initiated an Augmented Inspection Team to inspect and assess the facts and circumstances of the event. The team's report was issued on October 26, 2016. On August 11, 2016, the NRC issued a Confirmatory Action Letter documenting the commitments made by Westinghouse. The NRC verified through inspection the licensee's corrective actions required to be completed prior to restart and provided written consent to restart in a letter dated October 20, 2016. On December 20, 2016, the NRC issued a letter notifying Westinghouse that increased inspection oversight will be performed until longer term corrective actions have been completed.

This event is closed for the purpose of this report.

Exhibit 2 Example of Appendix B, "Other Events of Interest"

- OEI 16-01 Creusot Forge Documentation Anomalies and Carbon Segregation

The NRC included this event in this report because of the significant media coverage and congressional attention the event received.

In June 2016, the NRC became aware of the French Nuclear Safety Authority's (ASN) review of information related to anomalies with quality assurance documents and potential carbon segregation issues associated with components manufactured at AREVA's Creusot Forge (ACF) located in central France. ACF, a 100% subsidiary of the AREVA group, was purchased by AREVA in 2006 and manufactures forgings and castings used throughout the world-wide energy market. There are 17 US operating plants with components supplied by ACF.

Quality Assurance Records:

NRC staff participated in a multinational inspection at (ACF) focused on quality assurance documentation in late 2016 and the report was issued on February 27, 2017 (http://www.french-nuclear-safety.fr/Inspections/Supervision-of-the-epr-reactor/Anomalyaffecting-the-Flamanville-EPR-reactor-vessel/Multinational-inspection-of-AREVA-NP-in-itsCreusot-Forge-plant-in-Le-Creusot-France). As a result of the inspection, AREVA is conducting a number of internal corrective actions to address the quality assurance document issue. In addition, AREVA stated that files associated with U.S. licensees were reviewed and four of its U.S. purchasers were notified of the documentation issue and the conclusion of no safety significance. The NRC inspectors reviewed a sample of AREVA discrepancy notices and concluded that AREVA's evaluations were reasonable based on the test results and compliance with applicable American Society of Mechanical Engineers (ASME) Code requirements. NRC inspectors confirmed that ACF is not currently producing components for U.S. nuclear facilities.

On December 7, 2016, AREVA issued an interim report for the identification of an issue related to fabrication record anomalies at ACF. AREVA issued the interim report because its evaluation will not be completed within 60 days as required by NRC regulations. AREVA stated that its evaluation of documents is scheduled to be completed in June 2017. They also stated that, at this time, it does not appear that the documentation anomalies being evaluated could create a substantial safety hazard. NRC staff has requested additional information from AREVA to independently verify the extent of condition, and assess potential impacts for U.S. facilities.

Carbon Segregation:

It was reported in 2015 that reactor components manufactured at ACF for use in France exhibited carbon segregation, which is not expected, given the applicable French standards. Carbon segregation is a phenomenon that arises during the casting of large ingots, which are used to form large pressure vessel components. Concentrations of carbon will not be present, on a scale of engineering significance, in components properly manufactured following NRC regulations and ASME Code for use at U.S. facilities. However, the NRC staff has not identified a safety concern regarding carbon segregation based on knowledge of the U.S. material qualification process and preliminary structural evaluations for hypothesized concentrations of carbon in pressure vessels. Furthermore, the NRC has extensively evaluated the potential for reactor pressure vessel failure using state-of-the-art probabilistic fracture mechanics methodologies and concluded that the carbon segregation issue would be expected to have an insignificant impact on the probability of reactor pressure vessel failure in U.S. facilities. The NRC staff continues to follow the international response and perform inspection activities as needed to ensure there is no safety impact.

Exhibit 3 Example of Appendix C, "Updates of Previously Reported Abnormal Occurrences"

- Medical Events at Legacy Good Samaritan Medical Center in Portland, OR (previously reported as AS15-08 in NUREG-0090, Volume 38) (May 2016)

Date and Place — January 7, 2015, to February 12, 2015, in Portland, OR

Background — Legacy Good Samaritan Medical Center reported eight medical events associated with a gamma knife stereotactic radiosurgery (Elekta's Perfexion unit) that occurred between January 7, 2015, and February 12, 2015. Five of these events exceeded the 10-Gy (1,000-rad) dose threshold in the AO criterion. All eight patients received the prescribed dose, ranging from 7 to 24.9 Gy (700 to 2,490 rad), to the wrong location because of the manufacturer's misalignment of the patient positioning system during maintenance that was performed on the unit between December 13, 2014, and January 1, 2015. As a result of the maintenance, the positioning system was off target by 1.87 millimeters, which resulted in the medical events. Following the event, the licensee established a new set of quality assurance tests, with the cooperation of Elekta, to verify positioning.

Update on Consequences — As of fiscal year 2016, no patient effects have been observed.

Cause(s) — The medical events were caused by human error. According to Elekta, this adjustment was made without following the correct service procedures, which would have detected the error.

Update on Actions Taken to Prevent Recurrence

State — The Oregon Health Authority, Radiation Protection Services, continues its investigation relating to these events. Upon completion of the initial investigation in May 2015, the State identified, and during fiscal year 2016, continued to do further analysis in the following four focus areas:

(1) Further examine Elekta's license as it relates to the supervision of repair, operation, and testing of the Leksell Gamma Systems; specifically, reviewing Elekta's service technician employment qualification programs, including education history, training, and certifications.

(2) Determine whether adequate communications are in place between Elekta and licensees about the repair and maintenance of Elekta's devices.

(3) Determine the qualifications of the field service technician(s) who caused the misalignment of the patient positioning system during repair and the cause of the misalignment.

(4) Determine whether State regulations should be changed with regard to the qualifications and training of field service technicians, and, if a licensee is authorized to use a gamma knife, whether it should be required to perform routine quality checks by “pin prick” films.

The State has completed the review of these focus areas and is validating information by conducting interviews with personnel directly or indirectly involved with this event.

This event is open for the purpose of this report.