

# NRC INSPECTION MANUAL

NMSS/FCSS

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## INSPECTION PROCEDURE 88003

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### REACTIVE INSPECTION FOR EVENTS AT FUEL CYCLE FACILITIES

PROGRAM APPLICABILITY: 1301 and 2600

#### 88003-01 OBJECTIVES

01.01 This inspection procedure applies to the inspection of events, involving safety or safeguards, that occur at Nuclear Regulatory Commission (NRC)-regulated nuclear fuel cycle facilities. According to NRC Inspection Manual Chapter 1300, "Incident Response Actions," NRC management must determine the need to dispatch one or more regional or Headquarters inspectors to conduct a special inspection after an event occurs. The events to be inspected under this procedure include those that are considered significant enough to warrant special inspections to determine the operational status of safety and safeguards, but are not of such a nature as to require Incident Investigation Team (IIT) or an Augmented Inspection Team (AIT) inspections. Typically, the procedure will be used in response to: over exposures; losses or releases of significant quantities of radioactive materials; fires or toxic chemical spills that threaten losses of safety or safeguards controls, or that significantly increase the risks of such losses or releases; or actual losses of safety controls -- but its use is not limited to these types of events. The need for such an inspection may be strengthened by the occurrence of one or more previous events that may share a common root cause.

01.02 The objectives of the procedure are to assist the inspector to:

- a. Determine the safety or safeguards risk revealed by the event, and ensure that the current facility condition is safe. Determine that any compensatory measures taken in response to the event are adequate to ensure safety and safeguards until corrective actions are implemented, or that already implemented corrective actions are effective.
- b. Ensure that the regulatee has considered possible generic implications of the event for the facility, and identify any generic implications for other NRC-regulated fuel cycle facilities.

- c. Assess the regulatee's progress in conducting a root cause analysis of the event to determine if it is adequate to correctly identify direct, contributing, and root causes; likely precursors; and corrective actions to prevent recurrence.
- d. Monitor the regulatee's treatment of any previously unknown risk-significant system interactions revealed by the event, to ensure that the interactions will be incorporated into the facility's safety basis [e.g., Integrated Safety Analysis (ISA)], and that the facility's safety basis will be updated accordingly, if one has been completed.
- e. Verify that the regulatee responded to the event appropriately, in accordance with established emergency and safeguards contingency plans.

01.03 The primary emphasis of the inspection is on safety and safeguards, not compliance. Compliance issues are to be addressed only after all current safety and safeguards issues and program weaknesses related to the event are identified and clearly understood.

#### 88003-02 DEFINITIONS

02.01 Cause. One of possibly several actions or conditions that led to the occurrence of the event. Causes are labeled, according to their proximity to the event, as direct, contributing, or root causes.

02.02 Direct Cause. This is an action or occurrence that led directly to the event, without any additional intervening action or failure.

02.03 Contributing Cause. This is an action, occurrence, or condition that did not necessarily lead to the event, but increased the likelihood or potential magnitude of consequences of the event.

02.04 Root Cause. This is a cause whose existence establishes or permits the conditions that allow the contributing causes to develop, which, in turn, lead to the event.

02.05 Precursor. This is an occurrence, action, or condition that may be recognized as indicating a tendency toward the possibility of a more serious event occurring, assuming no intervention.

#### 88003-03 INSPECTION REQUIREMENT

Conduct a special inspection in response to an event, or series of related events, at a fuel cycle facility, to include the following:

03.01 Pre-Inspection Preparation and Notifications. Review information about the event that has been developed through coordination between regional and Headquarters management, and the resident inspector staff for the facility, if any, which resulted

in a determination of the need for the special inspection. Establish a clear understanding of the risk significance of the event among all participants with reference to the facility's documented safety and safeguards basis (e.g., ISA). Notify regulatee management of the inspection; ascertain the current status of the facility; and make appropriate arrangements with the regulatee. Determine, through discussions with the regulatee and NRC management, if any equipment has been or should be quarantined. (Determining the necessity for quarantining the area affected by the event, and making the appropriate arrangements with the regulatee, should have been addressed by NRC management, as part of the process of determining whether a special inspection should be performed.)

03.02 Entrance Meeting. Conduct an initial meeting with the regulatee's management, on reaching the site, to explain the purpose of the NRC special inspection, to obtain requested documentation, ascertain the availability of interviewees, and identify important regulatee contacts with whom you will be in contact during the inspection.

03.03 Facility Tour. Tour and inspect the areas of the facility affected by the event.

03.04 Interviews. Conduct interviews of regulatee personnel, as needed, to develop an understanding of the event, personnel actions, and facility system configuration and operations.

03.05 Documentation. Assemble and review the necessary documentation to characterize the event and its causes.

03.06 Sequence of Events. Develop a narrative describing the sequence of actions or occurrences leading up to the event, and verify that the actions were consistent with established plans and procedures.

03.07 Independently Identify Causes, Precursors, and Candidate Corrective Actions. Identify direct, contributing, and root causes, and possible precursors of the event, to the extent practicable, based on the available information. Also, identify candidate corrective actions, for later comparison with regulatee's determination of corrective actions.

03.08 Assess Regulatee's Root Cause Analysis. Assess the technical merit of the regulatee's identification of direct, contributing, and root causes of the event; event precursors; and the corrective actions determined by the regulatee. Verify that the regulatee's compensatory measures and corrective actions are adequate to ensure facility safety and safeguards and prevent recurrences of the type of event that occurred, before leaving the site. As part of the assessment, review the regulatee's consideration of possible generic issues at the facility, and consider whether issues arising from the event may apply at other NRC-regulated facilities.

03.09 Regulatee and NRC Management Briefings. Meet periodically with the regulatee's management and key personnel involved in the event, as the inspection continues, to provide the regulatee with

feedback, alert the regulatee to any additional safety or safeguards issues discovered, and request additional documents, or other support, as needed. Also, periodically inform appropriate NRC management of the progress of the inspection, and alert management to possible generic issues that could affect other fuel cycle facilities.

03.10 Allegations or Evidence of Wrongdoing. Ensure, when appropriate, that concerns received during the inspection are handled as allegations, including alleged instances of possible wrongdoing.

03.11 Exit Meeting. Meet with the highest level of the regulatee's management available at the site, to present the inspection findings, as the last activity before leaving the site.

#### 88003-04 INSPECTION GUIDANCE

04.01 Pre-Inspection Preparation and Notifications. Review information about the event already collected through coordination between regional and Headquarters management, and the resident inspector staff for the facility, if any, so that all parties have a clear understanding of the safety or safeguards significance of the event. The applicable portion of the regulatee's documented safety or safeguards basis (e.g., ISA) should be referenced.

The special inspection should be announced. The assigned (lead) inspector should contact the regulatee's management, to address issues requiring planning or preparation, to facilitate the inspection (e.g., information on current safety or safeguards status of the facility, any ongoing safety or safeguards issues, entrance meeting arrangements, identifying individuals to be interviewed, documents to be made available, and a facility tour).

04.02 Entrance Meeting. No additional guidance beyond what applies for routine inspections.

04.03 Facility Tour. The purpose of a facility tour is to help reconstruct the actions and occurrences leading to the event, to place all items and persons involved in proper spatial perspective, and to attempt to identify any factors, relating to the facility or equipment, that may have contributed to the event. A knowledgeable regulatee representative may be able to point out relevant items involved in the event, detail the path followed by involved persons, explain the layout of equipment and materials at the time of the event, or recount any equipment settings that may be relevant to the inspection.

04.04 Interviews. Interview persons at the site knowledgeable of, or involved in, the event (e.g., maintenance people; health physics safety people; process and system engineers; authors of involved procedures; nuclear criticality safety or other analysts who authored approval documents or reports around which the safety issues of the event revolve; people responsible for facilities, hardware, software, and/or supplies involved in the event; or supervisors, managers, and assistants whose responsibilities are

connected with the systems or persons involved in the event). The depth of the interviews will vary, depending on the proximity of the interviewee's activities, or responsibilities, in the event.

During the interviews, note the extent to which the persons interviewed are aware of the circumstances directly or indirectly connected to the event, and whether their knowledge and awareness are commensurate with their responsibilities in the organization, and consistent with known facts.

04.05 Documentation. During the course of the inspection, determine the necessary documents to review. These may include documents indicating the overall quality of the regulatee's operation, as well as those directly related to the event. Documents to review may include the following:

- a. Procedures for activities related to the event
- b. Training and Qualifications Records
- c. Maintenance, Surveillance, Functional Test, Calibration, and Quality Control Records
- d. Records of the Event
- e. Records of Recovery

04.06 Sequence of Events. Develop a sequence of actions and occurrences leading to the reported event, based on available information (e.g., interviews, logs, control room computer entries, strip chart recordings, etc.). This could include annotations of relevant details, such as postings in the area, instrument readings, procedures and equipment used, when equipment was turned on/off, etc. For a significant event, documentation of areas where there is disagreement or lack of information on what actually happened, can help illuminate problems with procedures or controls that may have permitted the event to occur. Record the involved persons' bases for actions taken, and note any developing conclusions as they become apparent.

Note where the regulatee's actions may have departed from established regulatee plans for incident response. Inappropriate responses to minor occurrences sometimes can lead to more serious events. Also, literal implementation of an established incident response plan can lead to events, if the plan is defective. Comparison of the regulatee's actions with established plans can help to identify where improvements in response plans may be needed as a corrective action.

04.07 Independently Identify Causes, Precursors, and Candidate Corrective Actions. Special inspection activity should be focused on identifying the causes and precursors of the event, and considering candidate corrective actions, independently of the regulatee's similar efforts. Although frequent and open communications between the inspector and regulatee staff should be encouraged, as the inspection progresses, inspectors should independently draw conclusions consistent with the assembled information. The information collected and analysis performed by the inspectors should be used to support their evaluation of the adequacy of the progress of the regulatee's root cause analysis.

Analysis of the sequence of actions and occurrences for an event can often lead to recognition of precursors. Inspectors may confer with the regulatee to determine if certain actions or occurrences, such as instrument readings, a series of a certain type of minor equipment failures, or changes in product consistency, etc., can be recognized as reliable precursors to the type of event that occurred, and inquire whether recognized precursors should be incorporated into the facility's safety or safeguards program.

Correlating the independent findings of causes by the inspector(s) with apparent weaknesses in the regulatee's program can help to formulate candidate corrective actions that would prevent recurrence. Although it is the regulatee's responsibility to determine corrective actions, the independent analysis of root cause and consideration of candidate corrective actions by the inspectors can provide valuable insight into the event, and provide a basis for evaluating the regulatee's analysis.

04.08 Assess Regulatee's Root Cause Analysis. The regulatee should have begun an analysis of the causes of the event, as soon as the facility was determined to be safe. Since this procedure will be in use only in cases where no AIT or IIT investigation is determined necessary, no significant effort should be required for event mitigation and cleanup, and substantial progress in the regulatee's investigation can be expected to occur while the special inspection is in progress.

Inspectors should be cognizant of the regulatee's effort to conduct a root cause analysis, as it proceeds, and, eventually, be aware of corrective actions determined by the licensee. As the regulatee's analysis progresses, compare the findings of the inspectors and those of the regulatee, and assess the pace and adequacy of the regulatee's analysis. Share any concerns with the lead inspector, who also should keep appropriate NRC management involved.

The regulatee's determination of root cause may not become known until after the inspectors leave the site, and may not even be available before the inspection report is issued. If this is the case, the inspection report may be issued with a preliminary determination of root cause. The inspector(s) should ensure that incomplete determinations of root cause and corresponding corrective actions are completed by the regulatee within a reasonable time, by specifying these activities as inspector followup items (with expected completion dates commensurate with the perceived risk).

04.09 Regulatee and NRC Management Briefings. Inspectors should meet periodically with regulatee staff, during the inspection, to exchange information on the course of their investigations, and ensure there are no surprises at the end of the inspection. Periodically, during the inspection, the lead inspector should notify the appropriate regional or Headquarters management of the status of the inspection and inspection findings. If, at the end of the inspection, the regulatee and the inspectors do not substantially agree on the causes of the event, or on the adequacy of the regulatee's determination of corrective actions -- or conclusions have not yet been reached on these issues --

appropriate regional and Headquarters management should be notified. If the inspectors do not believe the facility is in a safe or secure condition, they should inform the appropriate NRC management immediately and explain their position. Also, based on the findings of the inspection, and those of the regulatee, inspectors should immediately notify appropriate NRC management if they identify any generic issues that could affect safety or security at other NRC-regulated fuel cycle facilities.

04.10 Allegations or Evidence of Wrongdoing. Some of the information provided during a special inspection by regulatee employees, contractors, or other individuals may be considered allegations, and need to be addressed in conformance with NRC Management Directive 8.8, "Management of Allegations." Information regarding program inadequacy, provided by regulatee personnel, that is related to the subject of the special inspection, normally would not be considered an allegation. But, information provided about inadequacies in the subject regulatee's program, that is unrelated to the subject of the special inspection, or information about inadequacies at other regulatees or facilities, could be considered an allegation. If there is doubt about whether the information provided should be treated as an allegation, the inspector should consult with the lead inspector or the inspector's supervisor. Information obtained during an inspection, that indicates possible wrongdoing (as defined in Management Directive 8.8), whether provided by a regulatee employee or identified by NRC staff, must be considered an allegation, and should immediately be reported to the inspector's management and the Office Allegation Coordinator, for possible referral to the Office of Investigations, or other appropriate action.

04.11 Exit Meeting. No additional guidance beyond what applies for routine inspections.

#### 88003-05 REFERENCES

NRC Inspection Manual Chapters 0030, 2600, and 2603.

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