

REACTIVE INSPECTION DECISION BASIS FOR REACTORS

0309-01 PURPOSE

01.01 To provide guidance to NRR and the Regional staff for implementing the requirements prescribed in Management Directive (MD) 8.3, "NRC Incident Investigation Program."

01.02 To provide a detailed list of deterministic criteria that can be used on their own or in conjunction with a probabilistic risk assessment as a decision basis for implementing Incident Investigation Teams (IITs), Augmented Inspection Teams (AITs), and Special Inspections (SIs).

01.03 To provide guidance on the use of risk metrics and probabilistic risk assessment to determine the need for a reactive inspection.

01.04 To discuss the availability of various tools to communicate with internal and external stakeholders on event response and assessment.

01.05 To provide a sample format to use when documenting reactive inspection decisions.

0309-02 BACKGROUND

MD 8.3 is the Agency-level governing document for this Inspection Manual Chapter. MD 8.3 includes some of the deterministic and risk criteria for determining the agency's appropriate event response and delineates responsibilities at the office-level for response to significant operational events. A significant operational event is any radiological, safeguards, or other safety-related operational event at an NRC-licensed facility that poses an actual or potential hazard to public health and safety, property, or the environment. In this manual chapter, a significant operational event may also be referred to as "an event" or "an incident." This manual chapter provides specific roles and responsibilities for the staff involved in the event response process as well as guidance for developing cooperative staff-level relationships among the participating offices. In addition to plant events, this manual chapter highlights the need to assess the significance of a plant's degraded condition for considering an appropriate reactive inspection and provides guidance on the use of risk metrics to assess the significance of an event or degraded condition.

Inspection Procedure 71153, "Event Follow-up," provides inspection guidance for evaluating licensee events and degraded conditions. It also specifies that inspectors communicate details regarding the event to management, risk analysts and others in the Region and Headquarters as input to their determining the need for an IIT, AIT, or SI. Inspection Procedures 93800, "Augmented Inspection Team," and 93812, "Special Inspection," provide implementing guidance for AIT and SI responses. NUREG 1303 is a manual detailing the procedures for an IIT.

0309-03 RESPONSIBILITIES

03.01 Operating Experience Branch (IOEB). Responsible for the initial Office of Nuclear Reactor Regulation (NRR) follow-up of significant operational power reactor events. IOEB is the initial NRR point of contact **to coordinate** event evaluation. It works with the Regional Offices and inspectors to develop event details. It contacts appropriate technical branches **and the project manager** for support to address relevant technical and regulatory issues, including safety significance determination. If an event or condition warrants headquarters involvement in the reactive inspection decision, IOEB participates in the decision-making process (see section 04.06).

03.02 PRA Operational Support and Maintenance Branch (APOB). At the request of IOEB or the Regional Office, APOB evaluates the risk associated with significant operational events at power reactors. The APOB risk analyst should seek a consensus with the regional Senior Risk Analysts (SRAs) on the event's risk significance so that regional and headquarters management receive consistent risk insights. Any differences in risk calculations between headquarters and the region should be explained by the risk analysts. APOB provides the risk input to NRR management through IOEB. If an event or condition warrants headquarters involvement in the reactive inspection decision, APOB participates in the decision-making process (see section 04.06).

03.03 Other Technical Branches/NRR. At the request of IOEB, the Division of Operating Reactor Licensing (DORL), or the Regional Offices, NRR technical branches provide technical support for resolving issues identified during follow-up of significant operational events.

03.04 Division of Operating Reactor Licensing (DORL). The DORL Project Manager (PM) keeps abreast of **significant operational power reactor events at his/her plant(s)** and provides logistical support for the Regional Offices and other NRR staff during the short-term event response. The PM promptly alerts IOEB to potentially significant operational events. If an event or condition warrants headquarters involvement in the reactive inspection decision, the PM **provides logistical support** by setting up a conference call between headquarters and the region (see section 04.06).

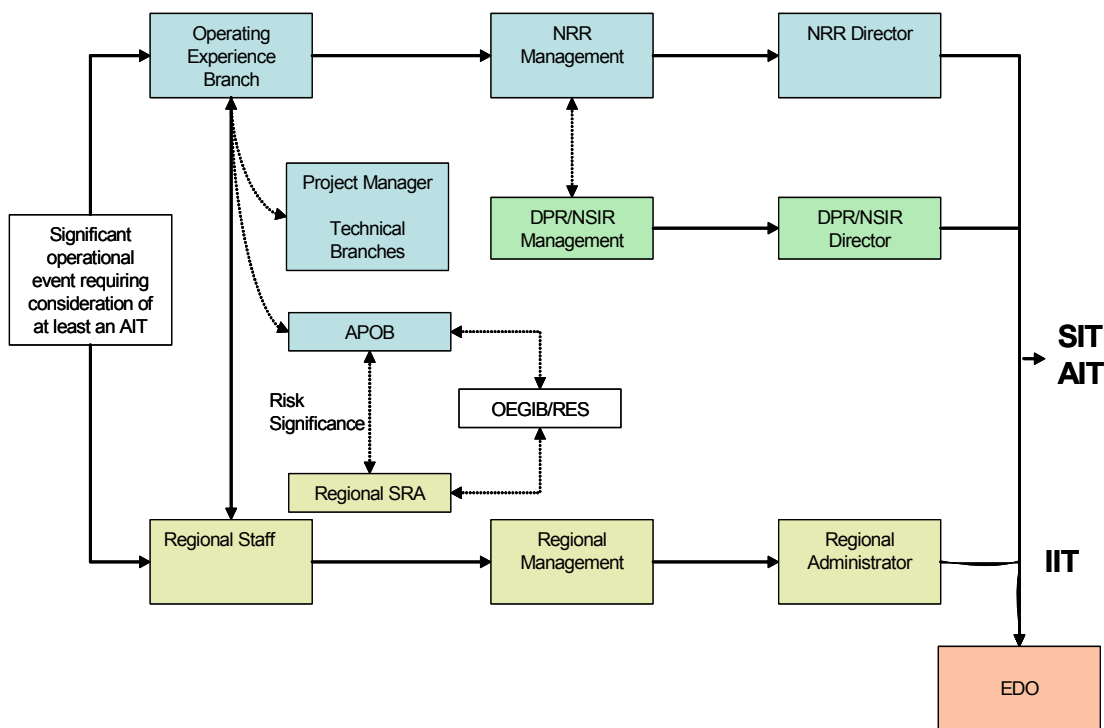
03.05 Regional Staff. Formulate the recommendation to the Regional Administrator (RA) regarding appropriate event response in the form of an SI, AIT, or IIT. If a decision is reached to conduct a specific reactive inspection, the regional staff provides the basis for that decision in the inspection charter. The charter discussion should include a description of the specific deterministic criteria and the PRA information (if required) that served as a basis for deciding on the reactive inspection. If an event or condition warrants

headquarters involvement in the reactive inspection decision, regional management and staff will participate in the decision-making process (see section 04.06).

03.06 Division of Preparedness and Response/Incident Response Directorate (DPR/IRD). DPR/IRD is part of the Office of Nuclear Security and Incident Response (NSIR). If an event or condition warrants headquarters involvement in the reactive inspection decision, IRD will participate in the decision-making process (see section 04.06).

The flow of communication among the participating staff organizations and the decision making points is depicted in Figure 1.

Figure 1: Flow Chart for Deciding an SI, AIT, or IIT



0309-04 REQUIREMENTS

04.01 Initial Event Notification and Follow-up. Upon notification to NRR of a **significant operational** power reactor event, IOEB performs the initial NRR event follow-up activities, including the coordination of the effort to determine the safety significance and generic implications of the event. The DORL Project Manager (PM) is kept informed of the event information and provides logistical support for appropriate NRR event follow-up activities. IOEB requests assistance from NRR technical staff as needed.

The Regional staff requests technical support from NRR, if needed, typically by contacting IOEB. Conversely, the IOEB staff promptly informs the Regional Offices of any significant

operational events that are being considered for appropriate event response in NRR.

04.02 Safety Significance Determination. Power reactor events meeting one or more of the deterministic criteria described in section 04.03 (and listed in Enclosure 1) are further evaluated for risk significance. In NRR, APOB (coordinating with the Office of Research and the responsible Regional Office) promptly evaluates the risk of events or degraded conditions when the risk numbers calculated by the regional SRA are at or above the SI/AIT overlap region of Table 1 or 2 ($>1E-5$ conditional core damage probability, or $>1E-6$ conditional large early release probability).

Upon request, APOB also evaluates the risk of events or degraded conditions that may warrant only an SI. Typically, IOEB or the Regional Office asks APOB for the evaluation. All currently available event (or degraded condition) and risk information should be provided to APOB in a timely manner for risk evaluation. APOB communicates with its regional counterparts, e.g., the regional SRAs, to share pertinent risk information and reach a consensus on the risk significance of the event or degraded condition. The regional SRAs inform regional management of the risk significance and APOB provides the NRR risk input to NRR management, typically through IOEB.

04.03 Risk Measures and Quantitative Criteria for IITs, AITs, and SIs. Significant operational power reactor events meeting any of the following deterministic criteria should be evaluated for risk to aid in determining the appropriate level of NRC response. These events may include significant unplanned degraded conditions identified by the licensee or NRC. Plant configurations due solely to planned maintenance need not be considered.

- Involved operations that exceeded, or were not included in, the design bases of the facility
- Involved a major deficiency in design, construction, or operation having potential generic safety implications
- Led to a significant loss of integrity of the fuel, the primary coolant pressure boundary, or the primary containment boundary of a nuclear reactor
- Led to the loss of a safety function or multiple failures in systems used to mitigate an actual event
- Involved possible adverse generic implications
- Involved significant unexpected system interactions
- Involved repetitive failures or events involving safety-related equipment or deficiencies in operations
- Involved questions or concerns pertaining to licensee operational performance

Significant operational power reactor events meeting any of the above deterministic criteria should be evaluated for risk as follows: Conditional Core Damage Probability (CCDP) best reflects loss of defense in depth due to the event, regardless of whether the cause is

deficient licensee performance or otherwise. CCDP accounts for actual plant configuration, including equipment unavailable because of maintenance and testing. Inspection Manual Chapter 0609, "Significance Determination Process," addresses CCDP determination. Although CCDP represents a fundamentally different concept for events than for degraded conditions that do not initiate an event, the same guidelines may be applied to each in assisting management in its risk-informed decision-making.

The lack of complete event information at the time of the NRC response decision focuses attention on the uncertainty of influential assumptions and their effect on the risk significance. Inspection Procedure 71153, "Event Follow-up," discusses inspector inputs to risk analyses that are needed to understand the risk significance. In determining risk significance of an operational event, NRC should assess the potential influence on risk of the following:

- Dominant core damage sequence(s)
- Level of confidence in failure/unavailability values assumed for the sequence(s)
- Influence on the CCDP estimate of contributing factors where the confidence level is low

Table 1 lists appropriate reactive inspection thresholds as a function of CCDP. The overlap of options relative to CCDP levels provides the opportunity to select different inspection or investigation options on the basis of such factors as uncertainty of the risk estimate coupled with the deterministic insights. Risk insights should also be used in considering the number of inspectors, their expertise, and the areas of focus.

Table 1: Event Response as a Function of CCDP

| Estimated CCDP | | | | |
|---------------------------------|---------------------------|--------------------|--------------------|-----------------------|
| CCDP < 1E-6 | 1E-6 → 1E-5 | 1E-5 → 1E-4 | 1E-4 → 1E-3 | CCDP > 1E-3 |
| No additional inspection | | | | |
| | Special Inspection | | | |
| | | AIT | | |
| | | | ITT | |

In addition to core damage risk, NRC should assess whether degraded conditions could increase the likelihood of a large early release resulting from containment failure or containment bypass. For events or degraded conditions associated with containment performance or bypass, the risk of a large early release, e.g., the conditional large early release probability (CLERP) or incremental CLERP (ICLERP), is evaluated, if practical, in addition to CCDP. Table 2 lists appropriate reactive inspection thresholds as a function of CLERP or ICLERP.

Table 2: Event Response as a Function of CLERP/ICLERP

| Estimated CLERP or ICLERP | | | | |
|----------------------------------|---------------------------|--------------------|--------------------|------------------------|
| CLERP < 1E-7 | 1E-7 → 1E-6 | 1E-6 → 1E-5 | 1E-5 → 1E-4 | CLERP > 1E-4 |
| No additional inspection | | | | |
| | Special Inspection | | | |
| | | AIT | | |
| | | | ITT | |

Enclosure 1 provides a form for regional personnel to use when documenting their decision whether or not to pursue a reactive inspection based on evaluation of the deterministic and risk criteria in this section. In order to fully document the basis for not performing a reactive inspection, both Enclosures 1 and 2 should be completed. As noted in Enclosure 1, the regions may customize the form in order to fit regional protocols, but the deterministic criteria should not be changed. The form, along with specific instructions for its completion by regional staff, should be included in regional office instructions or implementing procedures. Basic guidelines include:

- If none of the deterministic criteria were met, briefly document the key points of discussion in the Remarks section of the criteria that were the principal focus areas. Also, state that no deterministic criteria were met in the Response Decision section of the form.
- If one or more of the deterministic criteria were met, briefly indicate the basis for each in the Remarks section of the applicable criteria, and request an SRA perform a risk assessment and document results in the Conditional Risk Assessment section of the form.
- Use the Response Decision section to provide the basis for deciding whether or not to conduct a reactive inspection, and which level of inspection is recommended as specified in the guidance in this procedure and MD 8.3.
- If the risk assessment warrants either an SI or No Additional Inspection, regional management should document the decision by placing it in ADAMS, and notify NRR of its intentions.
- If the risk assessment warrants an AIT or IIT, regional management should contact NRR (IOEB) as coordination with NRC Headquarters will be necessary (see section 04.06).
- Whenever a reactive inspection is planned, the region should also notify the licensee of its intentions once a final decision is made.

04.04 Additional Factors That May Warrant an IIT, AIT, or SI. In addition to the significant operational power reactor events discussed in section 04.03, there are other significant operational events (related to reactor safety, radiation safety, or safeguards and security) that may occur at an NRC-licensed facility. The factors that cause these other types of incidents are not necessarily part of a licensee's probabilistic risk assessment (PRA) model, and their risk significance cannot be quantified. Therefore, the incidents must be examined solely against deterministic criteria when deciding on the appropriate level of reactive inspection. In addition, factors such as openness, public interest, and public safety should be appropriately considered by NRC when deciding whether to dispatch an IIT, AIT, or SI. These additional deterministic criteria are listed in section 04.05 (and in Enclosure 2). They are organized by type of incident (reactor safety, radiation safety, safeguards/security) and by what type of reactive inspection they should warrant.

Enclosure 2 provides a form for regional personnel to use when documenting their decision whether or not to pursue a reactive inspection based on evaluation of the deterministic criteria in section 04.05. In order to fully document the basis for not performing a reactive inspection, both Enclosures 1 and 2 should be completed. As noted in Enclosure 2, the regions may customize the form in order to fit regional protocols, but the deterministic criteria should not be changed. The form, along with specific instructions for its completion by regional staff, should be included in regional office instructions or implementing procedures. Basic guidelines include:

- If none of the deterministic criteria were met, briefly document the key points of discussion in the Remarks section of the criteria that were the principal focus areas. Also, state that no deterministic criteria were met in the Response Decision section of the form.
- If one or more of the deterministic criteria were met, briefly indicate the basis for each in the Remarks section of the applicable criteria.
- Use the Response Decision section to provide the basis for deciding whether or not to conduct a reactive inspection, and which level of inspection is recommended as specified in the guidance in this procedure and MD 8.3.
- If evaluation of the deterministic criteria warrants either an SI or No Additional Inspection, regional management should document the decision by placing it in ADAMS, and notify NRR of its intentions.
- If evaluation of the deterministic criteria warrants an AIT or IIT, regional management should contact NRR (IOEB) as coordination with NRC Headquarters will be necessary (see section 04.06).
- Whenever a reactive inspection is planned, the region should also notify the licensee of its intentions once a final decision is made.

04.05 Deterministic Criteria for IITs, AITs and SIs

For these criteria, no risk assessment is required, and meeting any one of the deterministic

criteria is the basis for considering an IIT, AIT, or SI (as specified). Some of these criteria are in MD 8.3, pages 6 through 8, as indicated.

Reactor Safety

Incident Investigation Team:

- Led to a site area emergency (MD 8.3)
- Exceeded a safety limit of the licensee's technical specifications (MD 8.3)
- Involved circumstances sufficiently complex, unique, or not well enough understood, or involved safeguards concerns, or involved characteristics the investigation of which would best serve the needs and interests of the Commission (MD 8.3)

Augmented Inspection Team:

- N/A

Special Inspection:

- Significant failure to implement the emergency preparedness program during an actual event, including the failure to classify, notify, or augment onsite personnel

Radiation Safety

Incident Investigation Team:

- Led to a significant radiological release (levels of radiation or concentrations of radioactive material in excess of 10 times any applicable limit in the license or 10 times the concentrations specified in 10 CFR Part 20, Appendix B, Table 2, when averaged over a year) of byproduct, source, or special nuclear material to unrestricted areas (MD 8.3)
- Led to a significant occupational exposure or significant exposure to a member of the public. In both cases, "significant" is defined as five times the applicable regulatory limit (except for shallow-dose equivalent to the skin or extremities from discrete radioactive particles) (MD 8.3)
- Involved the deliberate misuse of byproduct, source, or special nuclear material from its intended or authorized use, which resulted in the exposure of a significant number of individuals (MD 8.3)
- Involved byproduct, source, or special nuclear material, which may have resulted in a fatality (MD 8.3)
- Involved circumstances sufficiently complex, unique, or not well enough

understood, or involved safeguards concerns, or involved characteristics the investigation of which would best serve the needs and interests of the Commission (MD 8.3)

Augmented Inspection Team:

- Led to a radiological release of byproduct, source, or special nuclear material to unrestricted areas that resulted in occupational exposure or exposure to a member of the public in excess of the applicable regulatory limit (except for shallow-dose equivalent to the skin or extremities from discrete radioactive particles) (MD 8.3)
- Involved the deliberate misuse of byproduct, source, or special nuclear material from its intended or authorized use and had the potential to cause an exposure of greater than 5 rem to an individual or 500 mrem to an embryo or fetus (MD 8.3)
- Involved the failure of radioactive material packaging that resulted in external radiation levels exceeding 10 rads/hr or contamination of the packaging exceeding 1000 times the applicable limits specified in 10 CFR 71.87 (MD 8.3)
- Involved the failure of the dam for mill tailings with substantial release of tailings material and solution off site (MD 8.3)

Special Inspections:

- May have led to an exposure in excess of the applicable regulatory limits, other than via the radiological release of byproduct, source, or special nuclear material to the unrestricted area; specifically
 - occupational exposure in excess of the regulatory limits in 10 CFR 20.1201
 - exposure to an embryo/fetus in excess of the regulatory limits in 10 CFR 20.1208
 - exposure to a member of the public in excess of the regulatory limits in 10 CFR 20.1301
- May have led to an unplanned occupational exposure in excess of 40 percent of the applicable regulatory limit (excluding shallow-dose equivalent to the skin or extremities from discrete radioactive particles)
- Led to unplanned changes in restricted area dose rates in excess of 20 rem per hour in an area where personnel were present or which is accessible to personnel
- Led to unplanned changes in restricted area airborne radioactivity levels in excess of 500 DAC in an area where personnel were present or which is accessible to personnel and where the airborne radioactivity level was not promptly recognized and/or appropriate actions were not taken in a timely manner
- Led to an uncontrolled, unplanned, or abnormal release of radioactive material to the unrestricted area

- for which the extent of the offsite contamination is unknown; or,
 - that may have resulted in a dose to a member of the public from loss of radioactive material control in excess of 25 mrem (10 CFR 20.1301(e)); or,
 - that may have resulted in an exposure to a member of the public from effluents in excess of the ALARA guidelines contained in Appendix I to 10 CFR Part 50
- Led to a large (typically greater than 100,000 gallons), unplanned release of radioactive liquid inside the restricted area that has the potential for ground-water, or offsite, contamination
 - Involved the failure of radioactive material packaging that resulted in external radiation levels exceeding 5 times the accessible area dose rate limits specified in 10 CFR Part 71, or 50 times the contamination limits specified in 49 CFR Part 173
 - Involved an emergency or non-emergency event or situation, related to the health and safety of the public or on-site personnel or protection of the environment, for which a 10 CFR 50.72 report has been submitted that is expected to cause significant, heightened public or government concern

Safeguards/Security

Incident Investigation Team:

- Involved circumstances sufficiently complex, unique, or not well enough understood, or involved safeguards concerns, or involved characteristics the investigation of which would best serve the needs and interests of the Commission (MD 8.3)
- Failure of licensee safety-related equipment or adverse impact on licensee operations as a result of a safeguards initiated event (e.g., tampering).
- Actual intrusion into the protected area.

Augmented Inspection Team:

- Involved a significant infraction or repeated instances of safeguards infractions that demonstrate the ineffectiveness of facility security provisions (MD 8.3)
- Involved repeated instances of inadequate nuclear material control and accounting provisions to protect against theft or diversions of nuclear material (MD 8.3)
- Confirmed tampering event involving safety-related or security-related equipment
- Substantial failure in the licensee's intrusion detection or package/personnel search procedures which results in a significant vulnerability or compromise of plant safety or security

Special Inspections:

- Involved inadequate nuclear material control and accounting provisions to protect against theft or diversion, as evidenced by inability to locate an item containing special nuclear material (such as an irradiated rod, rod piece, pellet, or instrument)
- Involved a significant safeguards infraction that demonstrates the ineffectiveness of facility security provisions
- Confirmation of lost or stolen weapon
- Unauthorized, actual non-accidental discharge of a weapon within the protected area
- Substantial failure of the intrusion detection system (not weather related)
- Failure to the licensee's package/personnel search procedures which results in contraband or an unauthorized individual being introduced into the protected area
- Potential tampering event involving safety-related or security-related equipment where questions remain regarding licensee performance/response or a need exists to independently assess the licensee's conclusion that tampering was not a factor in the condition(s) identified

04.06 Recommendation to Management. If an initial review of the safety significance of the event finds that the event may warrant at most the consideration of an SI (based on the criteria of Sections 04.03 and 04.05), the RA makes the decision on whether or not to initiate the SI. In this case, regional management may consult with NRR and NSIR, but is not required to do so.

If the event meets one or more of the AIT deterministic criteria listed in section 04.05, or if the risk results calculated by the regional SRA or NRR APOB analysts are at or above the SI/AIT overlap region of Table 1 or 2 ($>1E-5$ CCDP or $>1E-6$ CLERP), promptly contact IOEB and provide event details. IOEB will direct the DORL PM to coordinate a conference call with representatives from the region, DORL, APOB, IOEB and NSIR/DPR to discuss whether an SI or AIT is more appropriate. In such cases, the RA, in consultation with the NRR Office Director, makes the final decision on whether to proceed with an AIT or SI.

For events that may warrant an IIT, the Directors of NRR and NSIR/DPR will consult with the RA and provide a recommendation to the EDO. In such cases, the EDO, in consultation with the RA, will make the ultimate decision on whether to proceed with an IIT.

04.07 Communications with Internal and External Stakeholders on Event Response and Assessment. For significant operational events, the staff should be cognizant of the communication tools that are available to enhance the effectiveness and efficiency of the agency's communications with its stakeholders. The NRC has developed the Event Response and Assessment Communications Plan. The plan is available in the ADAMS Main Library internal folder entitled "Communication Plans," and should be consulted

following a significant operational event or discovery of a significant degraded plant condition.

The communication tools available for event or degraded condition response and assessment include:

- a communications team
- central tracking of controlled correspondence
- a notification sequence for significant regulatory documents
- formalized questions and answers (Q&A) for common and expected significant events for use by the Office of Public Affairs (OPA) during initial event response
- a dedicated Web page for each event

If it is determined that a communications team is warranted, DORL typically plays the key NRR role in developing and coordinating the communications team and subsequent communications activities. Specific communication activity assignments are determined by the communications team. IOEB, the Regional Offices and other NRR branches support such DORL activities, as needed. Communication activities typically continue beyond the initial phase of investigative response until their goals have been accomplished.

0309-05 REFERENCES

Management Directive 8.2, "NRC Incident Response Program"

Management Directive 8.3, "NRC Incident Investigation Program"

Inspection Procedure 71153, "Event Followup"

NUREG1303, "Incident Investigation Manual"

Inspection Procedure 93800, "Augmented Inspection Team"

Inspection Procedure 93812, "Special Inspection"

Inspection Manual Chapter 0609, "Significance Determination Process"

END

| Decision Documentation for Reactive Inspection (Deterministic and Risk Criteria Analyzed) | | |
|---|--|------------------|
| PLANT: | EVENT DATE: | EVALUATION DATE: |
| Brief Description of the Significant Operational Event or Degraded Condition: | | |
| Y/N | DETERMINISTIC CRITERIA | |
| | a. Involved operations that exceeded, or were not included in, the design | |
| | Remarks: | |
| | b. Involved a major deficiency in design, construction, or operation having potential generic safety implications | |
| | Remarks: | |
| | c. Led to a significant loss of integrity of the fuel, primary coolant pressure boundary, or primary containment boundary of a nuclear reactor | |
| | Remarks: | |
| | d. Led to the loss of a safety function or multiple failures in systems used to mitigate an actual event | |
| | Remarks: | |
| | e. Involved possible adverse generic implications | |
| | Remarks: | |
| | f. Involved significant unexpected system interactions | |
| | Remarks: | |
| | g. Involved repetitive failures or events involving safety-related equipment or deficiencies in operations | |
| | Remarks: | |
| | h. Involved questions or concerns pertaining to licensee operational performance | |
| | Remarks: | |

| CONDITIONAL RISK ASSESSMENT | |
|--|-------|
| RISK ANALYSIS BY: | DATE: |
| Brief Description of the Basis for the Assessment (may include assumptions, calculations, references, peer review, or comparison with licensee's results): | |
| The estimated conditional core damage probability (CCDP) is _____ and places the risk in the range of a _____ and _____ inspection. | |

| RESPONSE DECISION | |
|---|-------|
| USING THE ABOVE INFORMATION AND OTHER KEY ELEMENTS OF CONSIDERATION AS APPROPRIATE, DOCUMENT THE RESPONSE DECISION TO THE EVENT OR CONDITION, AND THE BASIS FOR THAT DECISION | |
| DECISION AND DETAILS OF THE BASIS FOR THE DECISION: | |
| BRANCH CHIEF REVIEW: | DATE: |
| DIVISION DIRECTOR REVIEW: | DATE: |

Note: The above tables are provided as examples only. The regions have discretion to modify these tables in their implementing procedures or office instructions.

| Decision Documentation for Reactive Inspection (Deterministic-only Criteria Analyzed) | |
|---|--|
| PLANT: | EVENT DATE: |
| EVALUATION DATE: | |
| Brief Description of the Significant Operational Event or Degraded Condition: | |
| REACTOR SAFETY | |
| Y/N | IIT Deterministic Criteria |
| | Led to a Site Area Emergency |
| | Remarks: |
| | Exceeded a safety limit of the licensee's technical specifications |
| | Remarks: |
| | Involved circumstances sufficiently complex, unique, or not well enough understood, or involved safeguards concerns, or involved characteristics the investigation of which would best serve the needs and interests of the Commission |
| | Remarks: |
| Y/N | SI Deterministic Criteria |
| | Significant failure to implement the emergency preparedness program during an actual event, including the failure to classify, notify, or augment onsite personnel |
| | Remarks: |
| RADIATION SAFETY | |
| Y/N | IIT Deterministic Criteria |
| | Led to a significant radiological release (levels of radiation or concentrations of radioactive material in excess of 10 times any applicable limit in the license or 10 times the concentrations specified in 10 CFR Part 20, Appendix B, Table 2, when averaged over a year) of byproduct, source, or special nuclear material to unrestricted areas |
| | Remarks: |

| | |
|------------|---|
| | Led to a significant occupational exposure or significant exposure to a member of the public. In both cases, "significant" is defined as five times the applicable regulatory limit (except for shallow-dose equivalent to the skin or extremities from discrete radioactive particles) |
| | Remarks: |
| | Involved the deliberate misuse of byproduct, source, or special nuclear material from its intended or authorized use, which resulted in the exposure of a significant number of individuals |
| | Remarks: |
| | Involved byproduct, source, or special nuclear material, which may have resulted in a fatality |
| | Remarks: |
| | Involved circumstances sufficiently complex, unique, or not well enough understood, or involved safeguards concerns, or involved characteristics the investigation of which would best serve the needs and interests of the Commission |
| | Remarks: |
| Y/N | AIT Deterministic Criteria |
| | Led to a radiological release of byproduct, source, or special nuclear material to unrestricted areas that resulted in occupational exposure or exposure to a member of the public in excess of the applicable regulatory limit (except for shallow-dose equivalent to the skin or extremities from discrete radioactive particles) |
| | Remarks: |
| | Involved the deliberate misuse of byproduct, source, or special nuclear material from its intended or authorized use and had the potential to cause an exposure of greater than 5 rem to an individual or 500 mrem to an embryo or fetus |
| | Remarks: |

| | |
|------------|--|
| | Involved the failure of radioactive material packaging that resulted in external radiation levels exceeding 10 rads/hr or contamination of the packaging exceeding 1000 times the applicable limits specified in 10 CFR 71.87 |
| | Remarks: |
| | Involved the failure of the dam for mill tailings with substantial release of tailings material and solution off site |
| | Remarks: |
| Y/N | SI Deterministic Criteria |
| | <p>May have led to an exposure in excess of the applicable regulatory limits, other than via the radiological release of byproduct, source, or special nuclear material to the unrestricted area; specifically</p> <ul style="list-style-type: none"> • occupational exposure in excess of the regulatory limits in 10 CFR 20.1201 • exposure to an embryo/fetus in excess of the regulatory limits in 10 CFR 20.1208 • exposure to a member of the public in excess of the regulatory limits in 10 CFR 20.1301 |
| | Remarks: |
| | May have led to an unplanned occupational exposure in excess of 40 percent of the applicable regulatory limit (excluding shallow-dose equivalent to the skin or extremities from discrete radioactive particles) |
| | Remarks: |
| | Led to unplanned changes in restricted area dose rates in excess of 20 rem per hour in an area where personnel were present or which is accessible to personnel |
| | Remarks: |
| | Led to unplanned changes in restricted area airborne radioactivity levels in excess of 500 DAC in an area where personnel were present or which is accessible to personnel and where the airborne radioactivity level was not promptly recognized and/or appropriate actions were not taken in a timely manner |
| | Remarks: |

| | |
|--|--|
| | <p>Led to an uncontrolled, unplanned, or abnormal release of radioactive material to the unrestricted area</p> <ul style="list-style-type: none"> • for which the extent of the offsite contamination is unknown; or, • that may have resulted in a dose to a member of the public from loss of radioactive material control in excess of 25 mrem (10 CFR 20.1301(e)); or, • that may have resulted in an exposure to a member of the public from effluents in excess of the ALARA guidelines contained in Appendix I to 10 CFR Part 50 |
| | Remarks: |
| | Led to a large (typically greater than 100,000 gallons), unplanned release of radioactive liquid inside the restricted area that has the potential for ground-water, or offsite, contamination |
| | Remarks: |
| | Involved the failure of radioactive material packaging that resulted in external radiation levels exceeding 5 times the accessible area dose rate limits specified in 10 CFR Part 71, or 50 times the contamination limits specified in 49 CFR Part 173 |
| | Remarks: |
| | Involved an emergency or non-emergency event or situation, related to the health and safety of the public or on-site personnel or protection of the environment, for which a 10 CFR 50.72 report has been submitted that is expected to cause significant, heightened public or government concern |
| | Remarks: |

| SAFEGUARDS/SECURITY | |
|----------------------------|---|
| Y/N | IIT Deterministic Criteria |
| | Involved circumstances sufficiently complex, unique, or not well enough understood, or involved safeguards concerns, or involved characteristics the investigation of which would best serve the needs and interests of the Commission |
| | Remarks: |
| | Failure of licensee safety-related equipment or adverse impact on licensee operations as a result of a safeguards initiated event (e.g., tampering). |
| | Remarks: |
| | Actual intrusion into the protected area. |
| | Remarks: |
| Y/N | AIT Deterministic Criteria |
| | Involved a significant infraction or repeated instances of safeguards infractions that demonstrate the ineffectiveness of facility security provisions |
| | Remarks: |
| | Involved repeated instances of inadequate nuclear material control and accounting provisions to protect against theft or diversions of nuclear material |
| | Remarks: |
| | Confirmed tampering event involving safety-related or security-related equipment |
| | Remarks: |
| | Substantial failure in the licensee's intrusion detection or package/personnel search procedures which results in a significant vulnerability or compromise of plant safety or security |
| | Remarks: |
| Y/N | SI Deterministic Criteria |
| | Involved inadequate nuclear material control and accounting provisions to protect against theft or diversion, as evidenced by inability to locate an item containing special nuclear material (such as an irradiated rod, rod piece, pellet, or instrument) |
| | Remarks: |

| | |
|--|--|
| | Involved a significant safeguards infraction that demonstrates the ineffectiveness of facility security provisions |
| | Remarks: |
| | Confirmation of lost or stolen weapon |
| | Remarks: |
| | Unauthorized, actual non-accidental discharge of a weapon within the protected area |
| | Remarks: |
| | Substantial failure of the intrusion detection system (not weather related) |
| | Remarks: |
| | Failure to the licensee's package/personnel search procedures which results in contraband or an unauthorized individual being introduced into the protected area |
| | Remarks: |

| | |
|---|-------|
| RESPONSE DECISION | |
| USING THE ABOVE INFORMATION AND OTHER KEY ELEMENTS OF CONSIDERATION AS APPROPRIATE, DOCUMENT THE RESPONSE DECISION TO THE EVENT OR CONDITION, AND THE BASIS FOR THAT DECISION | |
| DECISION AND DETAILS OF THE BASIS FOR THE DECISION: | |
| BRANCH CHIEF REVIEW: | DATE: |
| DIVISION DIRECTOR REVIEW: | DATE: |

Note: The above tables are provided as examples only. The regions have discretion to modify these tables in their implementing procedures or office instructions.

Attachment 1

Revision History for IMC 0309

| Commitment Tracking Number | Issue Date | Description of Change | Training Needed | Training Completion Date | Comment Resolution Accession Number |
|----------------------------|-----------------------|--|-----------------|--------------------------|-------------------------------------|
| N/A | 09/12/06 | Revision history reviewed for the last four years. | N/A | N/A | N/A |
| N/A | 04/04/07 CN 07-012 | IMC 0309 is revised to provide deterministic criteria for performing reactive inspections in areas such as reactor safety, radiation safety, and safeguards/security. Deterministic and risk-informed decision criteria from MD 8.3 are included in IMC 0309. Enclosures 1 and 2 are added to provide a sample format for documenting reactive inspection decisions. | None | N/A | ML070860416 |
| N/A | 01/10/08 CN 08-002 | Defines the SI/AIT risk overlap region as the basis for region interaction with NRR, and NSIR in determining the level of event response. Provides deterministic criteria for events involving potential tampering with safety or security related equipment. | None | N/A | ML073370664 |
| N/A | 03/23/09 CN 09-010 | Enclosures 1 and 2 when deciding not to perform a reactive inspection. Delete 2 IIT deterministic criteria that are redundant with MD 8.10. | No | N/A | ML082820096 |