
MANUAL CHAPTER 0309

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 Followup," 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) followup of significant operational power reactor events. It acts as the point of contact for NRR on the risk-informed event response. It works with the Regional Offices and inspectors to develop event details. It contacts appropriate technical branches for support to address relevant technical and regulatory issues, including safety significance determination. IOEB coordinates with the Probabilistic Risk Assessment (PRA) Operational Support and Maintenance Branch (APOB), other technical branches, the Division of Preparedness and Response in the Office of Nuclear Security and Incident Response (NSIR/DPR), and the Division of Operating Reactor Licensing (DORL) to recommend the appropriate event response to NRR management. Based on the recommendation, the Director of NRR will consult with the appropriate Regional Administrator (RA) and the Director of NSIR/DPR to decide on the appropriate reactive inspection if the criteria are met for consideration of an AIT or IIT. If analysis of a significant operational event only warrants consideration of an SI, the decision authority to carry out the SI resides with the RA.

03.02 PRA Operational Support and Maintenance Branch (APOB) At the request of IOEB or the Regional Offices, APOB evaluates the risk associated with significant operational events at power reactors. It contacts and coordinates with the Operating Experience and Generic Issues Branch (OEGIB) of the Office of Nuclear Regulatory Research (RES) to perform the risk evaluation. It also communicates with the regional Senior Reactor Analysts (SRAs) to share risk insights and results. The APOB risk analyst and the regional SRAs should seek a consensus on the event's risk significance through effective communications, so that regional and Headquarters management receive the same risk insights or any significant differences in assumptions and corresponding results. APOB provides the risk input to NRR management through IOEB.

03.03 Other Technical Branches/NRR. At the request of IOEB, DORL, or the Regional Offices, NRR technical branches provide technical support for resolving issues identified during followup of significant operational events.

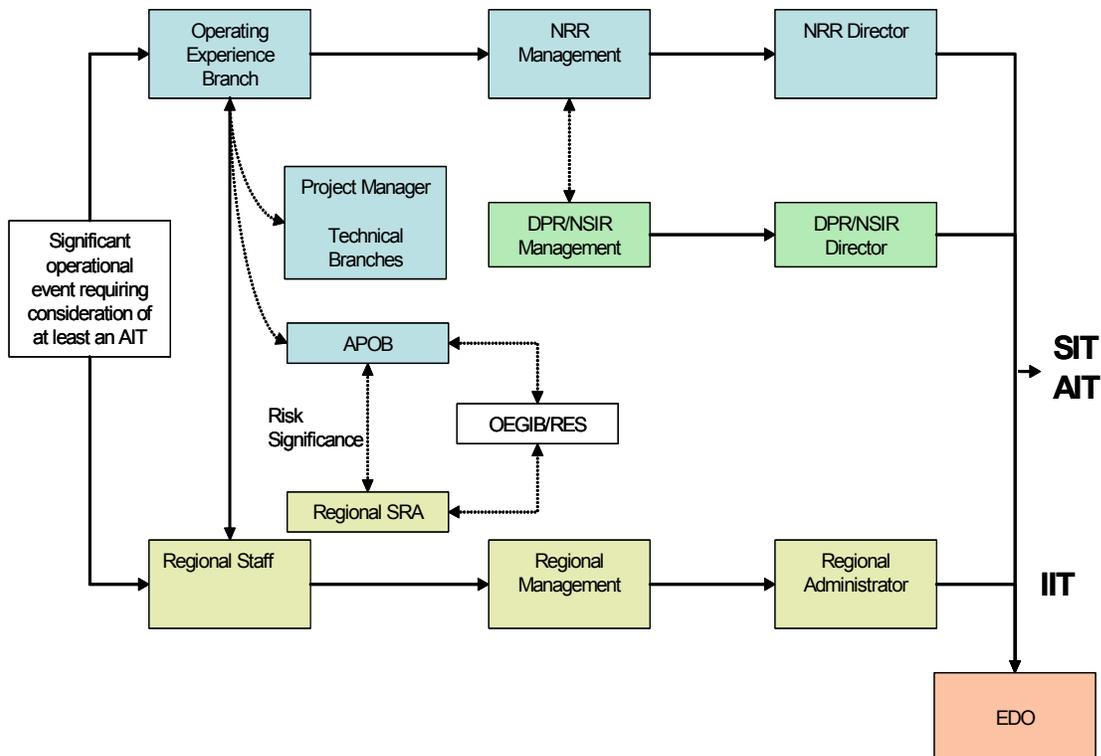
03.04 Division of Operating Reactor Licensing (DORL). The DORL Project Manager (PM) keeps abreast of the event and provides logistical support for the Regional Offices and other NRR staff during the short-term event response. It promptly alerts IOEB to potentially significant operational events.

03.05 Regional Staff. Formulate the recommendation to the 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.

The flow of communication among the participating staff organizations and the decision making points are depicted in Figure 1. See Section 04.06.

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



0309-04 REQUIREMENTS

04.01 Initial Event Notification and Followup. Upon notification to NRR of a power reactor event, IOEB performs the initial NRR event followup 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 followup activities. IOEB or the DORL PM requests assistance from NRR technical staff as needed.

The Regional staff requests technical support from NRR, if needed, typically by contacting IOEB. For events or degraded conditions that warrant at least consideration of an AIT, the Regional staff promptly informs IOEB of the event and event details. Conversely, the IOEB staff promptly inform 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 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 SIT/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 Offices 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 the 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 the 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 Followup," 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		
			IIT	

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		
			IIT	

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. 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.
- 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. 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. 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.
- 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 medical use of byproduct, source, or special nuclear material and may have resulted in deterministic effects to a significant number of patients or individuals over a long period (months or years) (MD 8.3)
- Involved medical, academic, or commercial use of byproduct, source, or special nuclear material and resulted in the potential exposure of a significant number of individuals above occupational or public dose limits (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 a consideration of an SI (based on the criteria of Sections 04.03 and 04.05), the regional management makes the decision.

In this case, the 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 SIT/AIT overlap region of Table 1 or 2 ($>1E-5$ CCDP or $>1E-6$ CLERP), promptly contact IOEB and provide event details. IOEB will assist in coordinating a conference call with representatives from the region, DORL, APOB, and NSIR/DPR to discuss whether an SIT or AIT is more appropriate. In such cases, the Director, NRR, in consultation with the RA, makes the final decision on whether to proceed with an AIT or SIT.

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, who 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. a communications team
- b. central tracking of controlled correspondence
- c. a notification sequence for significant regulatory documents
- d. 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
- e. 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 bases of the facility	
	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): <div style="border: 1px solid black; height: 100px; width: 100%;"></div>	
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: <div style="border: 1px solid black; height: 60px; width: 100%;"></div>	
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 medical use of byproduct, source, or special nuclear material and may have resulted in deterministic effects to a significant number of patients or individuals over a long period (months or years)	

	Remarks:
	Involved medical, academic, or commercial use of byproduct, source, or special nuclear material and resulted in the potential exposure of a significant number of individuals above occupational or public dose limits
	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:
	<p>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)</p>
	Remarks:
	<p>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</p>
	Remarks:
	<p>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</p>
	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:
	<p>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</p>
	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 SIT/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