

4

**Decision Documentation for Reactive Inspection
(Deterministic & Risk Criteria Analyzed)
(MC 0309 Enclosure 1)**

PLANT: TMI 1

EVENT DATE: 11/21/09

EVALUATION DATE: 11/24/09

Brief Description of the Significant Operational Event or Degraded Condition:

TMI is shutdown for a refueling outage that includes steam generator replacement. At approximately 4 pm on Saturday November 21, 2009, atmospheric monitors in the reactor building alarmed indicating airborne contamination. Personnel were directed to immediately leave the reactor building until the source of the activity could be identified. Approximately 150 workers were monitored for radiation exposure. Several workers alarmed the portal monitors as they exited the reactor building. These workers were given a whole body count to assess their dose. Approximately 12 of the workers who received whole body assessments received doses estimated between 10 – 40 mrem. No worker approached or exceeded any occupational exposure limits. Surveys directly outside the reactor building construction opening indicated a slight increase in activity. No contamination was identified outside the reactor building. Airborne activity in containment returned to pre-event levels 4-6 hours after the initial alarms.

The licensee attributed the cause of the contamination event to a change in air pressure inside the containment building that dislodged small irradiated particles in piping systems. Some of these particles became airborne and were detected by containment air monitors. One airborne monitor near the containment construction opening did show a short duration increase in activity; however, the licensee estimates that this released activity was less than 1% (0.04 mrem) of the quarterly Offsite Dose Calculation Model (ODCM) limit (7.5 mrem). The licensee surveyed the area around the containment construction opening and reported that they did not detect any contamination in the areas that were surveyed.

Y/N	DETERMINISTIC CRITERIA
No	a. Involved operations that exceeded, or were not included in, the design bases of the facility. Remarks: The reactor was shut down for a refueling outage. No reactor operations were in progress that exceeded, or were not included in, the design bases of the facility.
No	b. Involved a major deficiency in design, construction, or operations having potential generic safety implications. Remarks: There were not any deficiencies identified that have potential generic safety implications
No	c. Led to a significant loss of integrity of the fuel, primary coolant pressure boundary, or primary containment boundary of a nuclear reactor. Remarks: There was no impact or challenge on the integrity of the fuel, primary coolant pressure boundary, or primary containment boundary. The reactor was defueled with the fuel in the spent fuel. No fuel movement activities were being conducted.
No	d. Led to the loss of a safety function or multiple failures in systems used to mitigate an actual event. Remarks: There was no loss of a safety function or multiple failures in systems used to mitigate an actual event.
No	e. Involved possible adverse generic implications: Remarks: There were not any indications of adverse generic implications

E/33

No	f. Involved significant unexpected system interactions.
	Remarks: There were not any significant unexpected system interactions.
No	g. Involved repetitive failures or events involving safety-related equipment or deficiencies in operations.
	Remarks: There were not any repetitive failures associated with this occurrence.
No	h. Involved questions or concerns pertaining to licensee operational performance.
	Remarks: There were not any questions or concerns pertaining to licensee operational performance. In response to airborne contamination alarms licensee immediately stopped work, evacuated containment and took actions to monitor and assess potential contamination and exposure.

CONDITIONAL RISK ASSESSMENT	
RISK ANALYSIS BY: N/A	DATE: N/A
Brief Description of the Basis for the Assessment: No deterministic criteria were met therefore a risk analysis is not required.	

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: No deterministic criteria were met. Continue to monitor under normal baseline inspections.	
BRANCH CHIEF REVIEW: <i>David W. Kelly</i>	DATE: 11/30/2009
DIVISION DIRECTOR REVIEW: <i>Ames</i>	DATE: 11/30/2009

Enclosure 2

Decision Documentation for Reactive Inspection (Deterministic-only Criteria Analyzed)	
PLANT: TMI	EVENT DATE: 11/21/09
EVALUATION DATE: 11/24/09	
Description:	
<p>TMI is shutdown for a refueling outage that includes steam generator replacement. At approximately 4 pm on Saturday November 21, 2009, atmospheric monitors in the reactor building alarmed indicating airborne contamination. Personnel were directed to immediately leave the reactor building until the source of the activity could be identified. Approximately 150 workers were monitored for radiation exposure. Several workers alarmed the portal monitors as they exited the reactor building. These workers were given a whole body count to assess their dose. Approximately 12 of the workers who received whole body assessments received doses estimated between 10 – 40 mrem. No worker approached or exceeded any occupational exposure limits. Surveys directly outside the reactor building construction opening indicated a slight increase in activity. No contamination was identified outside the reactor building. Airborne activity in containment returned to pre-event levels 4-6 hours after the initial alarms.</p> <p>The licensee attributed the cause of the contamination event to a change in air pressure inside the containment building that dislodged small irradiated particles in piping systems. Some of these particles became airborne and were detected by containment air monitors. One airborne monitor near the containment construction opening did show a short duration increase in activity; however, the licensee estimates that this released activity was less than 1% (0.04 mrem) of the quarterly Offsite Dose Calculation Model (ODCM) limit (7.5 mrem). The licensee surveyed the area around the containment construction opening and reported that they did not detect any contamination in the areas that were surveyed.</p>	
REACTOR SAFETY	
Y/N	IIT Deterministic Criteria
No	Led to a Site Area Emergency Remarks: No emergency declaration was required or made.
No	Exceeded a safety limit of the licensee's technical specifications Remarks: Safety limits were not challenged.
No	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: The circumstances surrounding the event were sufficiently understood by the licensee, the resident inspectors and regional staff.
Y/N	SI Deterministic Criteria
No	Significant failure to implement the emergency preparedness program during an actual event,

	including the failure to classify, notify, or augment onsite personnel
	Remarks: No emergency declaration was required or made.
RADIATION SAFETY	
Y/N	IIT Deterministic Criteria
No	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: No radiological releases in excess any applicable limit in the license of byproduct, source, or special nuclear material to unrestricted areas
No	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: No significant occupational exposure or significant exposure to a member of the public. Approximately 12 workers received doses estimated at 10-40 mrem. The occupational exposure limit is 5000 mrem/year. There is not an indication of exposure to a member of the public.
No	Involved 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: No exposure of a significant number of individuals above occupational or public dose limits. Approximately 12 workers received doses estimated at 10-40 mrem. The occupational exposure limit is 5000 mrem/year. There is not an indication of exposure to a member of the public.
No	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: No indicated 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 radiological consequences.
No	Involved byproduct, source, or special nuclear material, which may have resulted in a fatality
	Remarks: No reported fatality.
No	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: Did not involve 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.
Y/N	AIT Deterministic Criteria

No	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: No radiological release of byproduct, source, or special nuclear material to unrestricted areas.
No	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: No deliberate misuse of byproduct, source, or special nuclear material.
No	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: Did not involve radioactive material packaging.
Y/N	SI Deterministic Criteria
No	<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: No reported occupational radiological exposure in excess of the applicable regulatory limits; no reported exposure to an embryo/fetus or member of the public.
No	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: No unplanned occupational exposure in excess of 40 percent of the applicable regulatory limit. Approximately 12 workers received doses estimated at 10-40 mrem (<10% of occupational limit). The occupational exposure limit is 5000 mrem/year
No	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: No changes in restricted area dose rates in excess of 20 rem per hour.
No	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: In response to airborne contamination alarms licensee immediately stopped work and evacuated containment.
No	Led to an uncontrolled, unplanned, or abnormal release of radioactive material to the unrestricted area

	<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
	<p>Remarks: No uncontrolled, unplanned, or abnormal release of radioactive material to the unrestricted area. The licensee surveyed the area near the containment construction opening and did not detect any contamination in the areas that were surveyed.</p>
No	<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>
	<p>Remarks: No reported release of radioactive liquid.</p>
No	<p>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</p>
	<p>Remarks: Did not involve the failure of radioactive material packaging.</p>
Yes	<p>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</p>
	<p>Remarks: This event was reported to the NRC under 10 CFR 50.72(b)(2)(xi) which is a four hour report for any event or situation, related to the health and safety of the public or onsite personnel, or protection of the environment, for which a news release is planned or notification to other government agencies has been or will be made. This event drew a significant amount of media attention, as well as attention from other federal agencies and the State of Pennsylvania.</p>

SAFEGUARDS/SECURITY

Y/N	IIT Deterministic Criteria
No	<p>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</p>
	<p>Remarks: No security/safeguards concerns related to event.</p>
No	<p>Failure of licensee safety-related equipment or adverse impact on licensee operations as a result of a safeguards initiated event (e.g., tampering).</p>
	<p>Remarks: No security/safeguards concerns related to event.</p>
No	<p>Actual intrusion into the protected area.</p>
	<p>Remarks: No security/safeguards concerns related to event.</p>
Y/N	AIT Deterministic Criteria

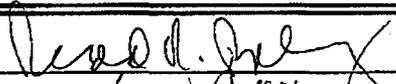
No	Involved a significant infraction or repeated instances of safeguards infractions that demonstrate the ineffectiveness of facility security provisions
	Remarks: No security/safeguards concerns related to event.
No	Involved repeated instances of inadequate nuclear material control and accounting provisions to protect against theft or diversions of nuclear material
	Remarks: No security/safeguards concerns related to event.
No	Confirmed tampering event involving safety-related or security-related equipment
	Remarks: No security/safeguards concerns related to event.
No	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: No security/safeguards concerns related to event.
Y/N	SI Deterministic Criteria
No	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: Issue did not involve inadequate nuclear material control and accounting provisions.
No	Involved a significant safeguards infraction that demonstrates the ineffectiveness of facility security provisions.
	Remarks: No security/safeguards concerns related to event.
No	Confirmation of lost or stolen weapon
	Remarks: No security/safeguards concerns related to event.
No	Unauthorized, actual non-accidental discharge of a weapon within the protected area
	Remarks: No security/safeguards concerns related to event.
No	Substantial failure of the intrusion detection system (not weather related)
	Remarks: No security/safeguards concerns related to event.
No	Failure to the licensee's package/personnel search procedures which results in contraband or an unauthorized individual being introduced into the protected area
	Remarks: No security/safeguards concerns related to event.
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:

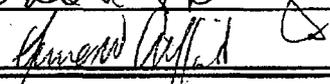
No reactive inspection recommended despite meeting one Enclosure 2 Radiation Safety SI deterministic criteria. NRC radiation safety inspectors responded to the site and conducted a thorough evaluation of the event. The conduct of a reactive inspection in response to the event would not provide any additional significant insights.

BRANCH CHIEF REVIEW:



DATE: 11/30/2009

DIVISION DIRECTOR REVIEW:



DATE: 11/30/2009