

Decision Documentation for Reactive Inspection
(Deterministic-only Criteria Analyzed)

PLANT: Duane Arnold
Energy Center

EVENT DATE: 10/16/12

EVALUATION DATE: 10/17/12

Brief Description of the Significant Operational Event or Degraded Condition:
The plant is currently in a refueling and maintenance outage, which includes repair and recoating of the torus. It was during the performance of this activity that the work identified the need for additional tie off points for fall protection purposes. The new locations were discussed, without specificity, with radiation protection. This expanded scope of work was authorized but the areas were not surveyed by radiation protection. Ten workers became contaminated, with nine exhibiting an uptake of radioactive materials. The initial dose calculations indicate a maximum of 19 mrem to one of the workers.

REACTOR SAFETY

Y/N

IIT Deterministic Criteria

N/A

Led to a Site Area Emergency

Remarks:

N/A

Exceeded a safety limit of the licensee's technical specifications

Remarks:

N/A

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

N/A

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

Remarks:

N/A

Involved significant deficiencies in operational performance which resulted in degrading, challenging, or disabling a safety system function or resulted in placing the plant in an unanalyzed condition for which available risk assessment methods do not provide an adequate or reasonable estimate of risk.

Remarks:

RADIATION SAFETY	
Y/N	IIT Deterministic Criteria
N	<p>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</p> <p>Remarks: This event occurred inside the torus and did not constitute a radiological release to unrestricted areas.</p>
N	<p>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)</p> <p>Remarks: This event did not lead to a significant occupational exposure as the highest dose was 19 mrem (CEDE) to an occupational radiation worker. Furthermore, there was no exposure to members of the public.</p>
N	<p>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</p> <p>Remarks: This event was caused by work in an area that was not surveyed by radiation protection and did not involve the misuse of radioactive material.</p>
N	<p>Involved byproduct, source, or special nuclear material, which may have resulted in a fatality</p> <p>Remarks: Affected workers were evaluated after the event and the event did not involve a fatality.</p>
N	<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: Radiological surveys were performed after the event and the radiological conditions are understood.</p>

Y/N	AIT Deterministic Criteria
N	<p>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)</p> <p>Remarks: This event occurred inside the torus and did not constitute a radiological release to unrestricted areas.</p>
N	<p>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</p> <p>Remarks: This event was caused by work in an area that was not surveyed by radiation protection and did not involve the misuse of radioactive material.</p>
N	<p>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</p> <p>Remarks: This event did not involve packaging of radioactive material.</p>
N	<p>Involved the failure of the dam for mill tailings with substantial release of tailings material and solution off site</p> <p>Remarks: This event did not involve mill tailings.</p>

Y/N	SI Deterministic Criteria
N	<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 <p>Remarks: The maximum dose to any worker was 19 mrem (CEDE) and does not constitute an overexposure. Furthermore, this event did not involve declared pregnant workers or members of the public.</p>
N	<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> <p>Remarks: The maximum dose for this event was <100 mR (SDE) or 500 times less than the regulatory limit.</p>

N	<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> <p>Remarks: General area dose rates in the work area were 5 mrem/hour and did not change during the event.</p>
N	<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> <p>Remarks: Air samples collected reported that airborne radioactivity levels did not exceed 0.3 DAC in the area where the workers were present.</p>
N	<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 <p>Remarks: This event occurred inside the torus and did not constitute a radiological release to unrestricted areas.</p>
N	<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: This event occurred inside the torus and did not constitute a radiological release to unrestricted areas.</p>
N	<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: This event did not involve packaging of radioactive material.</p>
N	<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 did not report or plan to report the event per 10 CFR 50.72.</p>

SAFEGUARDS/SECURITY	
Y/N	IIT Deterministic Criteria
N/A	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:
N/A	Failure of licensee significant safety equipment or adverse impact on licensee operations as a result of a safeguards initiated event (e.g., tampering).
	Remarks:
N/A	Actual intrusion into the protected area.
	Remarks:
Y/N	AIT Deterministic Criteria
N/A	Involved a significant infraction or repeated instances of safeguards infractions that demonstrate the ineffectiveness of facility security provisions
	Remarks:
N/A	Involved repeated instances of inadequate nuclear material control and accounting provisions to protect against theft or diversions of nuclear material
	Remarks:
N/A	Confirmed tampering event involving significant safety or security 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
N/A	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:

N/A	Involved a significant safeguards infraction that demonstrates the ineffectiveness of facility security provisions
	Remarks:
N/A	Confirmation of lost or stolen weapon
	Remarks:
N/A	Unauthorized, actual non-accidental discharge of a weapon within the protected area
	Remarks:
N/A	Substantial failure of the intrusion detection system (not weather related)
	Remarks:
N/A	Failure to the licensee's package/personnel search procedures which results in contraband or an unauthorized individual being introduced into the protected area
	Remarks:
N/A	Potential tampering of vandalism event involving significant safety or security equipment where questions remain regarding licensee performance/response or a need exists to independently assess the licensee's conclusion that tampering or vandalism was not a factor in the condition(s) identified
	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:

A reactive inspection is not warranted for this event. The event is currently being inspected by two health physicists from Region III that were on-site conducting baseline inspection procedures for the refueling outage.

BRANCH CHIEF REVIEW: <i>/RA/ B. Dickson</i>	DATE: 10/18/12
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TSS TEAM LEADER REVIEW: <i>/RA/ J. Lara</i>	DATE: 10/18/12
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DIVISION DIRECTOR REVIEW: <i>/RA/ S. West</i>	DATE: 10/22/12
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DIVISION DIRECTOR REVIEW: <i>/RA/ By K. O'Brien Acting For S. Reynolds/</i>	DATE: 10/25/12
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ADAMS ACCESSION NUMBER ML12300A310
EVENT NOTIFICATION REPORT NUMBER (as applicable):

DISTRIBUTION:

Region

		Region
Darrell Roberts	DRP Division Director	I
James Clifford	DRP Deputy Director	I
Chris Miller	DRS Division Director	I
Peter Wilson	DRS Deputy Director	I
Rick Croteau	DRP Division Director	II
William Jones	DRP Deputy Director	II
Terrence Reis	DRS Division Director	II
Harold Christensen	DRS Deputy Director	II
Steven West	DRP Division Director	III
Gary Shear	DRP Deputy Director	III
Steven Reynolds	DRS Division Director	III
Kenneth O'Brien	DRS Deputy Director	III
Kriss Kennedy	DRP Division Director	IV
Allen Howe	DRP Deputy Director (Acting)	IV
Thomas Blount	DRS Division Director	IV
Jeffrey Clark	DRS Deputy Director (Acting)	IV
Julio Lara	Branch TSS Team Leader	III
Doris Chyu	Reactor Engineer	III
Nicholas Valos	Senior Reactor Analyst	III
Laura Kozak	Senior Reactor Analyst	III
Dave Passehl	Senior Reactor Analyst	III

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