MD 8.3 Evaluation
Decision Documentation for Reactive Inspection
(Deterministic and Risk Criteria Analyzed)

PLANT:	EVENT DATE:	DETERMINISTIC CRITERIA EVALUATION DATE:
Perry Unit 1	**05/24/2024**	**05/29/2024**

Brief Description of the Significant Operational Event or Degraded Condition:

On May 23, 2004, Perry Unit 1 shutdown the reactor due to an elevated unidentified reactor coolant system leakage exceeding the Technical Specification (TS) limits. This shutdown resulted in a 4-hour non-emergency 50.72 notification (EN# 57136). After the shutdown, the licensee entered the drywell and identified the sources of the leak.

At Perry, there is a suction and discharge valve on each reactor recirculation pump. These valves are not credited for isolating a leak during a plant event but can be used as isolation for maintenance activities. The increase in unidentified leakage was discovered to be from a flanged connection on the 'A' reactor recirculating pump suction valve stem packing into the valve's leak-off detection line. Approximately 12 gallons per minute (gpm) of leakage from the packing was detected when the control room received a valve leak-off high temperature alarm. 6 gpm leaked into the drywell general spaces through a flange leak in a glass flow gauge and eventually condensed into the drywell floor drain sump and was measured as unidentified leakage. The remaining 6 gpm passed through the glass flow gauge via the normal leak-off flow path into the drywell equipment drain sump and was measured as identified leakage.

The licensee initiated a manual shutdown when they recognized that the unidentified leakage of 6 gpm exceeded the TS limit of 5 gpm. All equipment operated as design during the shutdown and the operators performed per procedure as expected.

After reactor shutdown and discovery of the sources of the leakage, the licensee back-seated the reactor recirculating pump suction valve in the open position which greatly reduced the leakage from the packing. The licensee also closed a manual isolation valve in the leak-off line, upstream of the degraded flange, and inside the approved ASME code boundary for normal operating reactor pressure and temperature. This stopped the leak and returned the system to an operational configuration.

Y/N	DETERMINISTIC CRITERIA
N	1. Involved operations that exceeded, or were not included in, the design bases of the facility
	Remarks: Given the estimated 12 gpm leak from the 'A' reactor recirculating pump suction valve stem packing into the valve's leak off detection line, it was within the site's system capability for makeup. Therefore, this did not involve operations that exceeded, or were not included in, the design bases of the facility.

N	2. Involved a major deficiency in design, construction, or operation having potential generic safety implications
	Remarks: This event did not involve a major deficiency in design, construction, or operation having potential generic safety implications since it only involved a packing leak.
N	3. 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 loss of any fission product barriers. The leak was from a valve packing that was within the site's system capability for makeup.
N	4. Led to the loss of a safety function or multiple failures in systems used to mitigate an actual event
	Remarks: There were no loss of safety function or multiple failures in systems used to mitigate an actual event.
N	5. Involved possible adverse generic implications
	Remarks: No generic implication were identified.
N	6. Involved significant unexpected system interactions
	Remarks: No unexpected system interaction occurred. Except for the leak, all equipment operated as expected.
N	7. Involved repetitive failures or events involving safety-related equipment or deficiencies in operations
	Remarks: This event did not involve repetitive failures or events involving safety-related equipment or deficiencies in operations.
N	8. Involved questions or concerns pertaining to licensee operational performance
	Remarks: This issue did not involve questions or concerns pertaining to licensee operational performance. Operators performed as expected and per procedures.

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): Since none of the deterministic criteria was met, a risk assessment is not required or performed.	
The estimated conditional core damage probability (CCDP) is _____N/A_____ and places the risk in the range of a _____N/A_____ and _____N/A_____ 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: Based on the information we have at this point regarding equipment and operation performance, none of the deterministic criteria was met and no risk significance assessment was necessary. Therefore, a reactive inspection is not warranted. This event will be followed up by the resident inspectors under baseline inspection. We will re-evaluate this decision if additional information is available that changes the answer to any deterministic criterion or risk assessment inputs.	
BRANCH CHIEF: Thomas Hartman ***/RA/***	DATE: 07/02/2024
SRA: Dariusz Szwarc ***/RA by Joshua Havertape for/***	DATE: 07/02/2024
DIVISION DIRECTOR: Jason Kozal ***/RA/***	DATE: 07/02/2024
DIVISION DIRECTOR:	DATE:
RA (if reactive inspection is initiated)	DATE:
ADAMS ACCESSION NUMBER: ML24185A226 ADAMS PACKAGE ACCESSION NUMBER: ML24185A218 EVENT NOTIFICATION REPORT NUMBER (as applicable): 57136	

Internal Distribution List is at the end of this document.

Decision Documentation for Reactive Inspection

(Deterministic-only Criteria Analyzed)

PLANT: **Perry Unit 1**	EVENT DATE: **05/24/2024**	EVALUATION DATE: **05/29/2024**

Brief Description of the Significant Operational Event or Degraded Condition:

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At Perry, there is a suction and discharge valve on each reactor recirculation pump. These valves are not credited for isolating a leak during a plant event but can be used as isolation for maintenance activities. The increase in unidentified leakage was discovered to be from a flanged connection on the 'A' reactor recirculating pump suction valve stem packing into the valve's leak-off detection line. Approximately 12 gallons per minute (gpm) of leakage from the packing was detected when the control room received a valve leak-off high temperature alarm. 6 gpm leaked into the drywell general spaces through a flange leak in a glass flow gauge and eventually condensed into the drywell floor drain sump and was measured as unidentified leakage. The remaining 6 gpm passed through the glass flow gauge via the normal leak-off flow path into the drywell equipment drain sump and was measured as identified leakage.

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After reactor shutdown and discovery of the sources of the leakage, the licensee back-seated the reactor recirculating pump suction valve in the open position which greatly reduced the leakage from the packing. The licensee also closed a manual isolation valve in the leak-off line, upstream of the degraded flange, and inside the approved ASME code boundary for normal operating reactor pressure and temperature. This stopped the leak and returned the system to an operational configuration.

REACTOR SAFETY

Y/N	IIT Deterministic Criteria
N	1. Led to a Site Area Emergency
	Remarks: This event did not lead to a Site Area Emergency.
N	2. Exceeded a safety limit of the licensee's technical specifications
	Remarks: This event did not result in the licensee's Technical Specification Safety Limit being exceeded.

N	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
	Remarks: The leak was from a simple valve packing. It did not involve any complex, unique or not well understood phenomena.
Y/N	**SI Deterministic Criteria**
N	4. Significant failure to implement the emergency preparedness program during an actual event, including the failure to classify, notify, or augment onsite personnel
	Remarks: This event did not involve any failure to implement the emergency preparedness program.
N	5. 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: This event did not involve any deficiencies in operational performance.

RADIATION SAFETY	
Y/N	**IIT Deterministic Criteria**
N	1. 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: This event did not involve in radiological release to unrestricted areas. All leakage was contained in the drywell.
N	2. 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: This event did not involve any occupational exposure or exposure to a member of the public.
N	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
	Remarks: This event did not involve any deliberate misuse of byproduct, source, or special nuclear material that resulted in the exposure of individuals.
N	4. Involved byproduct, source, or special nuclear material, which may have resulted in a fatality
	Remarks: This event did not involve any byproduct, source, or special nuclear material, that resulted in a fatality.
N	5. 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 leak was from a simple valve packing. It did not involve any complex, unique or not well understood phenomena.
Y/N	**AIT Deterministic Criteria**
N	6. 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: This event did not involve a radiological release of byproduct, source, or special nuclear material to unrestricted areas.
N	7. 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: This event did not involve a deliberate misuse of byproduct, source, or special nuclear material.
N	8. 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: This event did not involve a failure of radioactive material packaging.
N	9. Involved the failure of the dam for mill tailings with substantial release of tailings material and solution off site
	Remarks: This event did not involve a failure of the dam for mill tailings.
Y/N	**SI Deterministic Criteria**
N	10. 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
	Remarks: This event did not involve any exposure via the radiological release of byproduct, source, or special nuclear material to the unrestricted area.
N	11. 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:
N	12. 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: This event did not involve an unplanned occupational exposure.
N	13. 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: This event did not involve an unplanned change in restricted area airborne radioactivity levels in an area where personnel were present or was accessible to personnel.
N	14. 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
	Remarks: This event did not involve an uncontrolled, unplanned, or abnormal release of radioactive material to the unrestricted area.
N	15. 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: This event did not involve an unplanned release of radioactive liquid inside the restricted area that had the potential for ground-water, or offsite, contamination.
N	16. 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: This event did not involve a failure of radioactive material packaging.
N	17. 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: This event did not involve an event that was expected to cause significant, heightened public or government concern.

SAFEGUARDS/SECURITY	
Y/N	**IIT Deterministic Criteria**
N	1. 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: This event did not involve any complex, unique, or not well enough understood, or safeguards concerns.
N	2. Failure of licensee significant safety equipment or adverse impact on licensee operations as a result of a safeguards-initiated event (e.g., tampering).
	Remarks: This event did not involve a safeguards-initiated event.
N	3. Actual intrusion into the protected area
	Remarks: This event did not involve an intrusion into the protected area.
Y/N	**AIT Deterministic Criteria**
N	4. Involved a significant infraction or repeated instances of safeguards infractions that demonstrate the ineffectiveness of facility security provisions
	Remarks: This event did not involve any instances of safeguards infractions.
N	5. Involved repeated instances of inadequate nuclear material control and accounting provisions to protect against theft or diversions of nuclear material
	Remarks: This event did not involve any nuclear material control and accounting provisions.
N	6. Confirmed tampering event involving significant safety or security equipment
	Remarks: This event did not involve a tampering event.
N	7. 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: This event did not involve a failure in the licensee's intrusion detection or package/personnel search procedures.

Y/N	SI Deterministic Criteria
N	8. 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: This event did not involve any inadequate nuclear material control and accounting provisions.
N	9. Involved a significant safeguards infraction that demonstrates the ineffectiveness of facility security provisions
	Remarks: This event did not involve a safeguards infraction.
N	10. Confirmation of lost or stolen weapon
	Remarks: This event did not involve any lost or stolen weapon.
N	11. Unauthorized, actual non-accidental discharge of a weapon within the protected area
	Remarks: This event did not involve a discharge of a weapon.
N	12. Substantial failure of the intrusion detection system (not weather related)
	Remarks: This event did not involve a failure of the intrusion detection system.
N	13. Failure to the licensee's package/personnel search procedures which results in contraband or an unauthorized individual being introduced into the protected area
	Remarks: This event did not involve a failure to the licensee's package/personnel search procedures.
N	14. Potential tampering or 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: This event did not involve tampering of vandalism.

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