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

PLANT: Perry	EVENT DATE: 2/26/2025	DETERMINISTIC CRITERIA EVALUATION DATE: 2/27/2025

Brief Description of the Significant Operational Event or Degraded Condition:
MD 8.3 Perry Circulating Water System Leak
On February 19, 2025, the Perry Nuclear Power Plant identified a circulating water system leak of approximately 500-1000 gpm on the discharge of the pumps, specifically, in the yard, upstream of the turbine building and condenser. The licensee took compensatory measures by installing portable pumps to redirect the water from the leak back to the cooling tower basin. The leak continued to degrade and reached 20,000 gpm on February 26, 2025. At that point the licensee initiated a reactor plant shutdown to repair the leak. Due to the leak exceeding the capacity of the portable pumps the water accumulated and migrated to different areas including:

- The Minor stream that leads offsite – The licensee performed testing of the water and did not identify any tritium or other radioactive material.
- Outside RAM (outdoor radiological equipment storage area) - Radiation Protection sampled this area and did not identify any contaminated water. They also plugged the drains and put up sandbags to mitigate the leakage into this area.
- Under the berm for the outdoor auxiliary boiler fuel oil tank – No current concerns with structural integrity or other impacts to the tank.
- East towards the plant and turbine building – though the operators identified water inside the building, there was no impact on any equipment. Water was not identified in any areas impacting safety.

There were no complications associated with the shutdown. The full extent of the degraded condition and impacts of the leak are unknown.

The residents and regional materials degradation specialists are evaluating the licensee's inspection and repair activities.

This event did not involve any security or radiological issues, nor required any entry into an emergency action level.

Y/N	DETERMINISTIC CRITERIA
N	1. Involved operations that exceeded, or were not included in, the design bases of the facility
	Remarks: There was no impact to the design basis of the facility. No important to safety equipment was impacted, and the licensee was able to shutdown the plant without any complications.
N	2. Involved a major deficiency in design, construction, or operation having potential generic safety implications
	Remarks: There were no identified deficiencies in design, construction or operation.

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: No fission product barriers were affected by this issue.
N	4. Led to the loss of a safety function or multiple failures in systems used to mitigate an actual event
	Remarks: Based on the best available information and inspection insights, the degraded condition did not impact multiple systems nor safety functions. The inspectors continue to monitor the identification of the extent of degradation to determine if there was the potential to impact multiple systems. As more information becomes available, this question will be re-evaluated if warranted.
N	5. Involved possible adverse generic implications
	Remarks: Based on the best available information and inspection insights from the onsite resident inspectors, there are currently no implications of a potential generic nature.
N	6. Involved significant unexpected system interactions
	Remarks: No unexpected system interactions were identified. Though water intrusion was identified in the turbine building it did not impact any equipment. As more information becomes available, this question will be re-evaluated if warranted.
N	7. Involved repetitive failures or events involving safety-related equipment or deficiencies in operations
	Remarks: The degraded condition did not impact any safety related equipment. No issues with operations were identified.
N	8. Involved questions or concerns pertaining to licensee operational performance
	Remarks: The degraded condition was not related to licensee operational performance. There were no identified issues with the actions taken by operations to shutdown the plant.

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): N/A	
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: Given that the issue did not have any adverse impacts on safety equipment or functions, did not cause an initiating event and based on the best available information, the degradation was limited to the identified leak location the decision was made to have the resident inspectors follow the issue through the baseline inspection with assistance from regional materials degradation specialists. This issue will be re-evaluated if warranted based on additional information identified during the inspection.	
BRANCH CHIEF: Elba Sanchez Santiago	Signed by Sanchez Santiago, Elba on 03/04/25 DATE:
SRA: Josh Havertape	Rodriguez, Lionel signing on behalf of Havertape, Joshua on DATE:
DIVISION DIRECTOR: Billy C. Dickson Jr.	Signed by Dickson, Billy on 03/04/25 DATE:
DIVISION DIRECTOR:	DATE:
RA (if reactive inspection is initiated)	DATE:
ADAMS ACCESSION NUMBER:ML25063A236 ADAMS PACKAGE ACCESSION NUMBER:ML25063A193 EVENT NOTIFICATION REPORT NUMBER (as applicable): Email to NRR_Reactive_Inspection@nrc.gov Profiled using template NRR-123 (ML18233A547)	

Note to preparer: If the decision was NOT to perform a reactive inspection, you must complete the rest of the form to fully document the basis for not performing a reactive inspection (IMC 0609 04.06).

Internal Distribution List is at the end of this document.

Decision Documentation for Reactive Inspection

(Deterministic-only Criteria Analyzed)

PLANT: Perry	EVENT DATE: 2/26/2025	EVALUATION DATE: 2/27/2025

Brief Description of the Significant Event or Degraded Condition:

On February 19, 2025, the Perry Nuclear Power Plant identified a circulating water system leak of approximately 500-1000 gpm on the discharge of the pumps, specifically, in the yard, upstream of the turbine building and condenser. The licensee took compensatory measures by installing portable pumps to redirect the water from the leak back to the cooling tower basin. The leak continued to degrade and reached 20,000 gpm on February 26, 2025. At that point the licensee initiated a reactor plant shutdown to repair the leak. Due to the leak exceeding the capacity of the portable pumps the water accumulated and migrated to different areas including:

- The Minor stream that leads offsite – The licensee performed testing of the water and did not identify any tritium or other radioactive material.
- Outside RAM (outdoor radiological equipment storage area) - Radiation Protection sampled this area and did not identify any contaminated water. They also plugged the drains and put up sandbags to mitigate the leakage into this area.
- Under the berm for the outdoor auxiliary boiler fuel oil tank – No current concerns with structural integrity or other impacts to the tank.
- East towards the plant and turbine building – though the operators identified water inside the building, there was no impact on any equipment. Water was not identified in any areas impacting safety.

There were no complications associated with the shutdown. The full extent of the degraded condition and impacts of the leak are unknown.

The residents and regional materials degradation specialists are evaluating the licensee’s inspection and repair activities.

This event did not involve any security or radiological issues, nor required any entry into an emergency action level.

REACTOR SAFETY	
Y/N	**IIT Deterministic Criteria**
N	1. Led to a Site Area Emergency
	Remarks:
N	2. Exceeded a safety limit of the licensee's technical specifications

	Remarks:
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:
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:
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:

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:
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:
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:
N	4. Involved byproduct, source, or special nuclear material, which may have resulted in a fatality
	Remarks:
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:
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:

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:
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:
N	9. 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**
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:
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:
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:

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:
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:
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:
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:

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:
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:
N	3. Actual intrusion into the protected area
	Remarks:
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:
N	5. Involved repeated instances of inadequate nuclear material control and accounting provisions to protect against theft or diversions of nuclear material
	Remarks:
N	6. Confirmed tampering event involving significant safety or security equipment
	Remarks:
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:
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:
N	9. Involved a significant safeguards infraction that demonstrates the ineffectiveness of facility security provisions
	Remarks:

N	10. Confirmation of lost or stolen weapon
	Remarks:
N	11. Unauthorized, actual non-accidental discharge of a weapon within the protected area
	Remarks:
N	12. Substantial failure of the intrusion detection system (not weather related)
	Remarks:
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:
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:

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