

Table 1: Decision Documentation for Reactive Inspection
(Deterministic and Risk Criteria Analyzed)

PLANT: Hatch Unit 2		EVENT DATE: 2/22/2025	EVALUATION DATE: 2/24/2025
On February 22, 2025, at 11:11 AM, while in Mode 5 at 0% power it was determined during local leak rate testing (LLRT) that the unit 2 primary containment leakage rate exceeded the allowable limit, La, defined in 10CFR50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors" due to both primary containment isolation valves (PCIV) in a penetration failing LLRT requirements.			
Y/N	DETERMINISTIC CRITERIA		
N	a. Involved operations that exceeded, or were not included in, the design bases of the facility		
	Remarks: Hatch FSAR section 5.2.1 "Primary Containment System, Safety Design Bases" says that the primary containment system is designed to limit leakage during and following the postulated design bases accident (DBA) to values that are substantially less than leakage rates resulting in doses approaching the reference doses in 10 CFR 50.67. At this time, we can't confirm that leakage rates would exceed those requirements.		
N	b. Involved a major deficiency in design, construction, or operation having potential generic safety implications		
	Remarks: The issue has not, at this time, been identified to have involved a major deficiency in design, construction, or operation having potential generic safety implications.		
N	c. Led to a significant loss of integrity of the fuel, primary coolant pressure boundary, or primary containment boundary of a nuclear reactor		
	Remarks: IMC 0308 says a LERF significant leakage rate of 100% containment volume per day would correspond to about 200 La for BWR Mark I plants. Although La was exceeded in this case, the leakage amount was significantly less than 100% containment volume. Leakage through this penetration has been preliminarily determined to be approximately 1.4% containment volume. Overall containment leakage rate will likely be more than 1.4% but not likely to approach the 100% value corresponding to the 200 La threshold for LERF significance		
Y	d. Led to the loss of a safety function or multiple failures in systems used to mitigate an actual event		
	Remarks: Although it was <u>not</u> reported as a loss of safety function per EN 57567, it should be reported as a loss of a safety function in the licensee event report (LER). LLRT failure of 2T48-F309 and 2T48-F324, Torus Purge Supply Isolation Valves, in a single penetration (205) represents a failure to maintain primary		

	containment integrity and violation of Technical Specification 3.6.1.1, "Primary Containment."
N	e. Involved possible adverse generic implications
	Remarks: Did not involve possible adverse generic implications.
N	f. Involved significant unexpected system interactions
	Remarks: Did not involve significant unexpected system interactions.
Y	g. Involved repetitive failures or events involving safety-related equipment or deficiencies in operations
	<p>Remarks: There have been repetitive LLRTs failures of PCIVs identified during previous RFOs.</p> <ul style="list-style-type: none"> LER 05000366/2023-001-00 stated that on February 7, 2023, with Unit 2 in a refueling outage and during planned Local Leak Rate Testing (LLRT) it was determined that the primary containment leakage rate exceeded the allowable limit, La, defined in 10CFR 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors" and specified in the Technical Specifications. Two primary containment isolation valve containment purge and vent valves, 2T48-F319 and 2T48-F320 in a single penetration failed LLRT which represents a failure to maintain primary containment integrity. Licensee troubleshooting and investigation efforts identified that the vendor supplied T-rings were manufactured incorrectly causing excessive LLRT leakage. As a corrective action correctly manufactured T-rings were installed in the affected valves, LLRTs were performed satisfactorily, and primary containment was restored to operable status. On January 4, 2020, Unit 2 primary containment leakage was determined to exceed allowable containment leakage (La) which resulted in a loss of the containment safety function. The licensee identified that primary containment purge and vent valves 2T48-F319 and 2T48-F320 were leaking to atmosphere. IR 2020010-02 documented a performance deficiency for the licensee's failure to identify and later correct containment leakage that was in excess of technical specification limits from October 22, 2019, until January 4, 2020. This resulted in primary containment being inoperable for greater than its allowed outage time and violation of TS. 3.6.1.1, "Primary Containment." The licensee replaced one valve and repaired the second valve. The licensee submitted LER 2020-001-00 and determined that the set screws that support the T-ring inside the PCIVs were backing out. The corrective action to prevent recurrence was to add to the instructions in the maintenance procedure to apply Loctite 222 to each set screw threads to prevent the set screws from backing out. In the LER, licensee stated that this issue did not involve

	<p>repetitive failures from previous cycles and all previous corrective actions taken in response to previous LLRT failures of these valves were effective.</p> <ul style="list-style-type: none"> On February 7, 2017, with Unit 2 in a refueling outage, the drywell ventilation penetration inboard isolation valve failed LLRT. On February 19, 2017, while still in the refueling outage, the drywell ventilation penetration outboard isolation valve failed LLRT. This condition represented a failure of the associated penetration to maintain primary containment integrity due to both PCIVs in this penetration flow path exceeding La. The cause of the PCIVs exceeding La was attributed to inadequate conditions related to the disc sealing ring that was found on both valves. Corrective actions included replacing the ring assemblies and adjusting the set screws on both PCIVs. A satisfactory LLRT was subsequently performed for both valves.
N	h. Involved questions or concerns pertaining to licensee operational performance
	Remarks: Did not involve questions or concerns pertaining to licensee operational performance.

CONDITIONAL RISK ASSESSMENT	
RISK ANALYSIS BY: A. Rosebrook	DATE: 3/4/25
<p>Brief Description of the Basis for the Assessment (may include assumptions, calculations, references, peer review, or comparison with licensee's results):</p> <p>Result: A regional Senior Reactor Analyst (SRA) conducted a risk evaluation, and the results of the evaluation determined that the containment penetration leakage would have screened to GREEN and therefore, the Conditional Large Early Release Probability (CLERP) would be less than 1E-7 putting this event in the baseline follow up region.</p> <p>Analysis: The evaluation of the penetration with the failed LLRT was modeled as an opening in containment. In accordance with the NRC Inspection Manual Chapter 0609, "Significance Determination Process," Appendix H, "Containment Integrity Significance Determination Process", this finding would be considered a Type B finding while the unit operated at power, since it would only affect large early release frequency and would not impact the Core Damage Frequency (CDF).</p> <p>In accordance with IMC 0609, appendix H, Table 4.1, "Containment-Related Structures, Systems and Components Considered for LERF Implications" containment isolation valves connecting BWR drywell to the environment can contribute to LERF in large lines (such as vent/purge). Therefore, an estimate of Delta LERF would be required using Section 07.01 "Approach for Assessing Type B Findings at Power."</p> <p>Table 7.1, "Phase 1 Screening - Type B Findis at Power", refers all containment penetration issue to a Phase 2 screening. Table 7.2, "Phase 2 Risk Significance – Type B Findings at Power", denotes for a BWR Mark I and Mark II containment that leakage from drywell to environment through vent and purge systems greater than 100 % containment volume/day is significant. In this event the LLRT failure was two orders of magnitude less than 100% containment volume per day. Therefore, the issue would screen to green and the CLERP would be less than 1E-7 putting this event in the baseline follow up region.</p>	
<p>The estimated conditional large early release probability (CLERP) is <u>less than 1E-7</u> and places the risk in the range of No reactive inspection required.</p>	



Table 2: Decision Documentation for Reactive Inspection (Deterministic-only Criteria Analyzed)		
PLANT: Hatch Unit 2	EVENT DATE: 2/22/2025	EVALUATION DATE: 2/24/2025
Brief Description of the Significant Operational Event or Degraded Condition: See Above.		
REACTOR SAFETY		
Y/N	IIT Deterministic Criteria	
N	Led to a Site Area Emergency	
	Remarks: Did not lead to a Site Area Emergency	
N	Exceeded a safety limit of the licensee's technical specifications	
	Remarks: Did not exceed a safety limit of the licensee's technical specifications.	
N	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 complex or unique circumstances.	
Y/N	SI Deterministic Criteria	
N	Significant failure to implement the emergency preparedness program during an actual event, including the failure to classify, notify, or augment onsite personnel	
	Remarks: No EAL thresholds were exceeded that would have required execution of the emergency preparedness program.	
N	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: Did not involve significant deficiencies in operational performance.	

RADIATION SAFETY	
Y/N	IIT Deterministic Criteria
N	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: There was no significant radiological release.
N	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: There was no significant occupational exposure or significant exposure.
N	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: Did not involve the deliberate misuse of byproduct, source, or special nuclear material.
N	Involved byproduct, source, or special nuclear material, which may have resulted in a fatality
	Remarks: Did not result in a fatality.
N	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 complex or unique circumstances.
Y/N	AIT Deterministic Criteria
N	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: Did not lead to a radiological release of byproduct, source, or special nuclear material to unrestricted areas.
N	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 was not the result of deliberate misuse of nuclear material.

N	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 result in the failure of radioactive material packaging.
N	Involved the failure of the dam for mill tailings with substantial release of tailings material and solution off site
	Remarks: Did not result in the failure of a mill tailing dam.
Y/N	SI Deterministic Criteria
N	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 <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: Did not lead to an exposure in excess of the applicable regulatory limits.
N	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: Did not lead to an unplanned occupational exposure.
N	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: Did not lead 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.
N	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: Did not lead to unplanned changes in restricted area airborne radioactivity levels in excess of 500 DAC.

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: Did not lead to a release of radioactive material.</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: Did not result in the unplanned release that has the potential for groundwater, or offsite contamination.</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: Did not result in the failure of radioactive material packing.</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: Did not involve 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.</p>

SAFEGUARDS/SECURITY	
Y/N	IIT Deterministic Criteria
N	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 is not considered a complex or unique issue.
N	Failure of license significant related equipment or adverse impact on licensee operations as a result of a safeguards initiated event (e.g., tampering).
	Remarks: The event did not involve tampering.
N	Actual intrusion into the protected area
	Remarks: Did not involve an intrusion into the protected area.
Y/N	AIT Deterministic Criteria
N	Involved a significant infraction or repeated instances of safeguards infractions that demonstrate the ineffectiveness of facility security provisions
	Remarks: Did not involve safeguards.
N	Involved repeated instances of inadequate nuclear material control and accounting provisions to protect against theft or diversions of nuclear material
	Remarks: Did not involve inadequate nuclear material control.
N	Confirmed tampering event involving significant safety-or security-equipment
	Remarks: The event did not involve tampering.
N	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: Was not a failure of the intrusion detection or package/personnel search procedures.
Y/N	SI Deterministic Criteria
N	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: Did not involve nuclear material control and accounting.

N	Involved a significant safeguards infraction that demonstrates the ineffectiveness of facility security provisions
	Remarks: Did not involve safeguards.
N	Confirmation of lost or stolen weapon
	Remarks: Did not involve the loss of a weapon.
N	Unauthorized, actual non-accidental discharge of a weapon within the protected area
	Remarks: Did not involve a weapon.
N	Substantial failure of the intrusion detection system (not weather related)
	Remarks: Did not involve the intrusion detection system.
N	Failure to the licensee's package/personnel search procedures which results in contraband or an unauthorized individual being introduced into the protected area
	Remarks: Did not involve the package/personnel search procedures.
N	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 conditions that tampering or vandalism was not a factor in the condition(s) identified.
	Remarks: Did not involve tampering.
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	
<p>DECISION AND DETAILS OF THE BASIS FOR THE DECISION:</p> <p>Due to the low risk involved, no reactive inspection is required. The residents will perform routine baseline inspection to follow up on this issue. Regional engineering inspectors will be available to support the resident review as necessary.</p>	
<p>BRANCH CHIEF REVIEW:</p> <p>Alan Blamey  Signed by Blamey, Alan on 03/11/25</p>	
<p>DIVISION DIRECTOR REVIEW:</p> <p>Mark E. Franke  Suber, Gregory signing on behalf of Franke, Mark on 03/13/25</p>	
<p>ADAMS ACCESSION NUMBER: ML25070A176</p> <p>EVENT NOTIFICATION REPORT NUMBER: EN 57567</p> <p>E-mail to NRR_Reactive_Inspection@NRC.GOV</p>	