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Pre-Application Meeting: Limerick LAR for a One-Time Exception to Appendix J, Type C Tests and Relief Request for ASME Inservice Tests

September 29, 2025

Agenda

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- Justification
- Corrective Maintenance and Test Results Li1R20 (Spring 2024)
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- Summary and Wrap-up
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Introductions

Corporate Licensing Engineers –Lane Oberembt, Ronnie Reynolds

Corporate Licensing Senior Manager – Wendi Para

Limerick Regulatory Assurance Engineer – Renee Guy

Limerick Regulatory Assurance Manager – Jordan Rajan

Limerick Strategic Engineering – TBD

Limerick In-Service and Appendix J Engineering – Evan Dimmerling

Limerick Programs Engineering Manager – Marcellus Ruff

Corporate In-Service Testing Engineer – Glenn Weiss

Limerick Digital Modernization Project (DMP) – Brian Devine, Brian Wysowski

Limerick Outage Management – Casey Coyle, Steve Deihm, Craig Hoffman, Vince Ferrizzi

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Meeting Objectives

- Present information to the NRC to provide a clear understanding of the proposed Limerick License Amendment Request (LAR) and associated Relief Request (RR).
  - LAR for a one-time exception of specified 10 CFR 50, Appendix J (App. J) Type C Local Leakage Rate Tests (LLRTs) until Spring 2028 refueling outage.
  - Relief Request to extend performance of ASME Inservice Leakage Tests (IST) until Spring 2028 refueling outage.
- Describe how the requests will support the safe and efficient installation of the DMP.
- Explain the technical justification for the requests.
- Obtain feedback from the NRC on the proposed LAR and RR to support development of a high-quality submittal and support efficient use of resources.
- Establish a mutual understanding of the proposed schedule and corresponding need date to ensure adequate NRC resource availability.

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Background Information: DMP

- The DMP will replace the existing analog control logic hardware of the Reactor Protection System (RPS) instrumentation, Nuclear Steam Supply Shutoff System (NSSSS) instrumentation, the Emergency Core Cooling System (ECCS) instrumentation, the Reactor Core Isolation Cooling (RCIC) system instrumentation, and the End-of-Cycle Recirculation Pump Trip (EOC-RPT) system instrumentation with a new single digital control system.
- The DMP will be the largest analog to digital upgrade of the safety-related Plant Protection Systems (PPS) at an operating nuclear plant.
  - ~ 1800 safety-related components being replaced by software functionalities.
- The DMP is scheduled to be installed in Unit 1 during the spring of 2026 (Li1R21).

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Background Information: Licensing Basis

- Appendix J Program
  - LGS, Unit 1 Technical Specification (TS) Amendment 118 (ML011560583) approved App. J, Option B performance-based testing.
  - LGS, Unit 1 TS Amendment 241 (ML19351E376) approved the extension of App. J, Type C testing interval up to 75-months.
- ASME IST Program
  - LGS, Unit 1 approved Relief Request GVRR-8 (ML20280A757) allows Pressure Isolation Valve (PIV) leakage testing on extended frequency pending satisfactory IST leakage and App. J tests.

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Background Information: Spring 2024 Results

	Appendix J Type C Program	Li1R20 App. J As-found leakage	Li1R20 App. J As-left leakage	ASME IST Program	Li1R20 IST As-found leakage (TS Limit 1.0 gpm)	Li1R20 IST As-left leakage (TS Limit 1.0 gpm)
HV-052-108 (Admin Limit 3000 sccm)	Y	Off-scale	150 sccm	Y	Off-scale	0.01 gpm
HV-051-1F015B (Admin Limit 5000 sccm)	Y	5,120 sccm	N/A	Y	0.0 gpm	N/A
HV-051-1F017B (Admin Limit 5000 sccm)	Y	18,000 sccm	100 sccm	Y	0.08 gpm	0.01 gpm
HV-051-1F027B (Admin Limit 5000 sccm)	Y	10,000 sccm	4,300 sccm	N	N/A	N/A

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Scope of Proposed Technical Specification Change

- TS 6.8.4.g “Primary Containment Leakage Rate Testing Program” requires the testing to meet 10 CFR 50, App. J, Option B be performed in accordance with NEI 94-01, “Industry Guideline for Implementing Performance–Based Option of 10 CFR Part 50, Appendix J,” Revision 3-A, dated July 2012, and the Limitations and Conditions specified in NEI 94-01, Revision 2-A, dated October 2008.
- NEI 94-01 stipulates that when App. J, Type C test results are not acceptable, the testing frequency should be reset to the initial test interval (i.e., 30 months).
- The LAR adds a Note to TS 6.8.4.g to permit a one-time exception from resetting the test interval to allow the App. J, Type C testing of four (4) valves HV-052-108, HV-051-1F015B, HV-051-1F017B, and HV-051-1F027B, to be deferred and completed no later than the Spring 2028 refueling outage (Li1R22).

Scope of Proposed Technical Specification Change

TS 6.8.4.g “**Primary Containment Leakage Rate Testing Program**”

A program shall be established to implement the leakage rate testing of the containment as required by 10 CFR 50.54 (o) and 10 CFR 50, Appendix J, Option B, as modified by approved exemptions. This program shall be in accordance with the guidelines contained in NEI 94-01,"Industry Guideline for Implementing Performance-Based Option of 10 CFR 50, Appendix J," Revision 3-A, dated July 2012, and the Limitations and Conditions specified in NEI 94-01, Revision 2-A, dated October 2008*. The peak calculated containment internal pressure for the design basis loss of coolant accident, Pa, is 44.0 psig.

** Note: A one-time exception from resetting the Type C test interval for valves: HV-052-108, HV-051-1F015B, HV-051-1F017B, and HV-051-1F027B has been approved in Amendment [XXX]. The Type C Test for the listed valves shall be performed no later than the end of the Spring 2028 refueling outage.*

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Scope of Proposed Relief Request

- The approved alternative in Relief Request GVRR-8 established a conservative control which stipulates that if any valve fails either the App. J, Type C or the ASME IST leakage tests, the interval for both tests would be reset to 2 years to be consistent with App. J, Option B requirement until good performance was reestablished.
- The App. J, Type C leakage was above the Administrative Limit for three (3) valves, HV-052-108, HV-051-1F015B, and HV-051-1F017B, and the corresponding test interval for each valve was reset to two (2) years.
- This RR is a one-time exception to GVRR-8 to defer resetting the test interval for the three valves listed above to allow the next ASME IST leak tests to be completed no later than completion of Li1R22 (Spring 2028).

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Justification: Impact to the Plant during DMP Install

- Due to the complex nature of the DMP, the current Li1R21 outage plan intentionally excludes work on the “B” train of the ECCS.
  - This allows alternate controls to be installed on “B” Train equipment to maintain adequate sources of Shutdown Cooling and Alternate Injection.
- Performance of LLRTs and ISTs leakage tests on the four “B” Train valves would require alternate controls to be installed on the “A” Train of ECCS equipment.
  - This must be done to maintain adequate nuclear safety.
- An additional Shutdown Cooling transfer between ECCS Trains would also be required
  - This transfer would be performed locally at the alternate controls and not from the Main Control Room

Justification: Technical

- Historical satisfactory valve leakage performance.
- Acceptable 2024 as-left Appendix J and IST Leakage Test results after maintenance performed.
- Robust in-body maintenance procedures and practices by qualified technicians.
  - Historical subsequent satisfactory leakage performance following maintenance.
- MOV diagnostic testing and program requirements ensuring reliable performance and consistent seating force.
- Alternate IST testing (valve exercising and stroke timing) will be performed in 2026 outage to demonstrate valve operational readiness.

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Corrective Maintenance and Test Results Li1R20 (Spring 2024)

- HV-052-108
  - Failed as-found App. J and ASME IST leakage tests
  - In-body maintenance performed
  - As-left App. J, Type C test leakage of 5% of its administrative limit
  - As-left ASME IST leakage was 0.01 gpm, which is 1% of allowable leakage

- HV-051-1F015B
  - As-found App. J, Type C test leakage was slightly above the administrative limit, but Containment leakage rate was acceptable ($< 0.6L_a$)
  - As-found ASME IST leakage was 0.0 gpm

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Corrective Maintenance and Test Results Li1R20 (Spring 2024)

- HV-051-1F017B
  - As-found App. J, Type C leakage above administrative limit.
  - As-found ASME IST leakage was acceptable at 0.08 gpm
  - In-body maintenance performed.
  - As-left App. J, Type C test leakage 2% of its administrative limit
  - As-left ASME IST leakage was 0.01 gpm, which is 1% of its allowable leakage
- HV-051-1F027B (Non- IST Leakage Tested Valve)
  - As-found App. J, Type C leakage above administrative limit.
  - In-body maintenance performed.
  - As-left App. J, Type C test leakage below the administrative limit.
  - Observed linear indication on the seat documented on similar valve on Unit 2 and subsequent leakage tests have been acceptable.

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Historical Test Results

	HV-052-108		HV-051-1F015B		HV-051-1F017B		HV-051-1F027B	
	App. J, Type C	IST	App. J, Type C	IST	App. J, Type C	IST	App. J, Type C	IST
Li1R19 (2022)	32.5 sccm	0.0 gpm	3300 sccm	0.17 gpm	8225 sccm	0.0 gpm	9750 sccm	N/A
Li1R18 (2020)	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	7100 sccm	N/A
Li1R17 (2018)	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	N/A
Li1R16 (2016)	20 sccm	0.1 gpm	102 sccm	0.1 gpm	443 sccm	0.0 gpm	4660 sccm	N/A
Li1R15 (2014)	20 sccm	0.0 gpm	1162.2 sccm	0.0 gpm	20 sccm	0.0 gpm	3720 sccm	N/A

Note 1 - Valve testing interval extended due to acceptable performance

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Overview of Submittal Schedule

- Pre-submittal Meeting with NRC to Discuss LAR and RR – September 29, 2025
- LAR and RR submittal from CEG by early October 2025.
- Request NRC approval by March 31, 2026, to support installation of the DMP in Li1R21 (Spring 2026).
- Performance of the next App. J, Type C test for valves: HV-052-108, HV-051-1F015B, HV-051-1F017B, and HV-051-1F027B in Li1R22 (spring 2028).
- Performance of the next ASME IST leakage test for valves: HV-052-108, HV-051-1F015B, and HV-051-1F017B in Li1R22 (spring 2028).

Summary and Wrap-up

- Request exception to the Appendix J, Type C (LLRT) testing for valves HV-052-108, HV-051-1F015B, HV-051-1F017B, and HV-051-1F027B and Relief Request from ASME IST Leakage test for valves HV-052-108, HV-051-1F015B, and HV-051-1F017B to allow Limerick to focus on the safe and efficient installation of the Digital Modernization Project.
- Performance of the Appendix J, Type C tests on the applicable valves will be included in Type C scope for refueling outage Li1R22 (spring 2028).
- Performance of the ASME IST leakage tests on the applicable valves will be included in IST scope for refueling outage Li1R22 (spring 2028).

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Questions?

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