

**Pre-Submittal Meeting for
Reload License Amendment Request to
Implement Framatome 17x17 GAIA Fuel at
Millstone Power Station Unit 3**

September 13, 2023

Agenda

- Introductions
- GAIA LAR Review Status and Schedule
- Reload LAR
 - Approval Requests
 - Technical Basis
 - Expected Attachments

GAIA Project Team

- Chris Clemens Supervisor, Fuel Procurement Engineering
- Dan Smith Fuel Procurement Project Manager
- Scott Luchau Supervisor, Nuclear Safety Analysis
- Brian Mount Nuclear Safety Analysis
- Ruxandra Bobolea Nuclear Safety Analysis
- Emily Tomlinson Nuclear Safety Analysis
- William Kohlroser Nuclear Safety Analysis
- Brian Vitiello Supervisor, Nuclear Core Design
- Brian Kinney Nuclear Core Design
- Rich Ridder Supervisor, Fuel Performance Assessment
- Dave van Schooneveld Fuel Performance Assessment
- Shayan Sinha Regulatory Affairs

GAIA Reload LAR

LAR Content – Approval Requests

- 1) TS Change to add DE Fleet Report DOM-NAF-2, App. F to the TS 6.9.1.6.b COLR list of methodologies
- 2) TS Change to add ORFEO-GAIA DDL (1.13) to TS 2.1.1.1 Reactor Core Safety Limit
- 3) TS Change to the P-8 setpoint in Table 2.2-1 Reactor Trip System Instrumentation Trip Setpoints
 - Conservative reduction from current 50% to 35%
- 4) DBLFPBs associated with the implementation of the FRM AREA method (ANP-10338-P-A) and DE Fleet Report VEP-NE-2-A

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LAR Content – Technical Basis

- 1) Addition of DOM-NAF-2, App. F to the COLR list
 - Reliant on pending approval of DOM-NAF-2, App. F (RAI responses currently in NRC review)
 - Discussion of the development of the ORFEO-GAIA SDL (1.26) and ORFEO-NMGRID SDL (1.31) for MPS3 with GAIA fuel in accordance with NRC-approved VEP-NE-2 topical
- 2) Addition of ORFEO-GAIA DDL (1.13) to TS 2.1.1.1 Safety Limit
 - Reliant on pending approval of DOM-NAF-2, App. F (RAI responses currently in NRC review)
- 3) Revision of P-8 setpoint to 35%
 - Results in an earlier trip than current setpoint

GAIA Reload LAR

LAR Content – Technical Basis (continued)

- 4) Approval of AREA DBLFPBs (analysis available for audit)
 - Compliance with RG 1.236 acceptance criteria (criteria met)
 - Compliance with ANP-10338-P-A Limitations and Conditions
 - Qualitative assessment for maintaining WEC Overpressure Analysis (WCAP-7588) as the AOR
- 5) Additional analyses/results
 - Statement that limited setpoint changes (e.g., k terms for $OT\Delta T/OP\Delta T$) are required for implementation of GAIA and will be implemented in accordance with 10 CFR 50.59
 - Mixed core DNB penalty developed for transition core effects

GAIA Reload LAR

LAR Content – Expected Attachments

- 1) Discussion of changes and technical basis, excluding SDL development
- 2) SDL development
- 3) Proposed TS pages (Mark-ups)
- 4) FRM affidavit supporting a request for withholding proprietary information
 - Inclusion dependent on in-process proprietary review

Discussion

2022			2023												2024												2025																		
Q4			Q1				Q2				Q3				Q4				Q1				Q2				Q3																		
Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug											
			M3C22 Operation																																										
			SFP Criticality Supplement NRC Review [12M Review Requested]																																										
			ORFEO DDL NRC Review [12M Review Requested]																																										
						T-M Design LAR NRC Review [12M Review Requested]																																							
					SB/LB LOCA LAR NRC Review [12M Review Requested]																																								
												M3C23 Operation																																	
															Reload LAR NRC Review [12M Review Requested]																														
																						GAIA Fuel Batch Fabrication																							
																																					M3C24 Operation								

References

- DE Topical Report, DOM-NAF-2-P-A, Revision 0.4, “Reactor Core Thermal-Hydraulics Using the VIPRE-D Computer Code,” September 2022 [ML21320A007]
 - Appendix F, “Qualification of the Framatome ORFEO-GAIA and ORFEO-NMGRID CHF Correlations in the Dominion Energy VIPRE-D Computer Code,” Pending NRC review [ML22353A620]
- DE Topical Report, VEP-NE-2-A, Revision 0, “Statistical DNBR Evaluation Methodology,” June 1987 [ML101330527]
- FRM Topical Report, ANP-10338P-A, Revision 0, “AREA™ - ARCADIA® Rod Ejection Accident,” December 2017 [ML18059A782]
- WEC Topical Report, WCAP-7588, Revision 1-A, “An Evaluation of the Rod Ejection Accident in Westinghouse Pressurized Water Reactors Using Spatial Kinetics Methods,” January 1975

Acronyms

AOR	Analysis of Record
CFR	Code of Federal Regulations
COLR	Core Operating Limits Report
DBLFPB	Design Basis Limits for Fission Product Barriers
DDL	Deterministic Design Limit for Fission Product Barrier Fuel Barrier
DE	Dominion Energy
DENC	Dominion Energy Nuclear Connecticut
DNB	Departure from Nucleate Boiling
FRM	Framatome
LAR	License Amendment Request
LB	Large Break
LOCA	Loss of Coolant Accident

Acronyms

MPS3	Millstone Power Station Unit 3
NRC	Nuclear Regulatory Commission
RG	Regulatory Guide
SB	Small Break
SDL	Statistical Design Limit
SE	Safety Evaluation
SFP	Spent Fuel Pool
T-M	Thermal-Mechanical
TS	Technical Specifications
WEC	Westinghouse Electric Company