Appendix A

Standard Supplemental Reload Licensing Report

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The following is the standard to be used for an individual plant Supplemental Reload Licensing Report with one mid–cycle exposure point. An analysis for one or more mid–cycle exposure limits is performed at the utility's option (see Subsection S.5.1) and will, therefore, not be presented in all Supplemental Reload Licensing Reports. The plant depicted herein is a Group Notch plant.

Doc. I.D.
Revision ⓝ
Class ⓝ
Date

Supplemental Reload Licensing Report

For

ⓐ

Reload ⓝ Cycle ⓝ

Approved: _____ Approved: _____
ⓐ ⓐ

ⓐ = Insert words

ⓝ = Insert numbers

Important Notice Regarding Contents of This Report

Please Read Carefully

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Acknowledgment

The engineering and reload licensing analyses, which form the technical basis of this Supplemental Reload Licensing Report, were performed by (a) of the Fuel Engineering Section. The Supplemental Reload Licensing Report was prepared by (a) . This document has been verified by (a) and reviewed by (a).

The basis for this report is General Electric Standard Application for Reactor Fuel, NEDE–24011–P–A–16, July 2006; and the U. S. Supplement, NEDE–24011–P–A–16–US, July 2006.

1. Plant–unique Items

List items different from or not included in last supplemental reload licensing report:	(a)	Appendix A or Reference of Item (a)

2. Reload Fuel Bundles

Fuel Type	Cycle Loaded	Number
Irradiated	(n)	[nnn]
New	(n)	[nnn]
Total		[nnn]

3. Reference Core Loading Pattern

Nominal previous cycle core average exposure at end of cycle:	[nnnnn] MWd/MT ([nnnnn] MWd/ST)
Minimum previous cycle core exposure at end of cycle from cold shutdown considerations	[nnnnn] MWd/MT ([nnnnn] MWd/ST)
Assumed reload cycle core average exposure at beginning of cycle	[nnnnn] MWd/MT ([nnnnn] MWd/ST)
Assumed reload cycle core average exposure at end of cycle:	[nnnnn] MWd/MT ([nnnnn] MWd/ST)
Reference core loading pattern (control cell core)	Figure (n)

4. Calculated Core Effective Multiplication and Control System Worth – No Voids, 20°C

Beginning of Cycle, $K_{effective}$	
Uncontrolled	1.1[nn]
Fully Controlled	0.9[nn]
Strongest Control Rod Out	0.9[nn]
R, Maximum Increase in Cold Core Reactivity with Exposure into Cycle, ΔK	0.0[nn]

5. Standby Liquid Control System Shutdown Capability

Boron, ppm	Shutdown Margin (ΔK) (20°C, Xenon Free)
nnn	0.0nn

6. Reload–Unique GETAB Anticipated Operational Occurrence (AOO) Analysis Initial Condition Parameters

Exposure: EOC							
	Peaking Factors			R–Factor	Bundle Power (MWT)	Bundle Flow (1000 lb/hr)	Initial MCPR
Fuel Design	Local	Radial	Axial				
Appropriate fuel design(s)	n.nn	n.nn	n.nn	n.nnn	n.nnn	nnn.n	1.nn

Exposure: EOC – (n) MWd/MT ((n) MWd/ST)							
	Peaking Factors			R–Factor	Bundle Power (MWT)	Bundle Flow (1000 lb/hr)	Initial MCPR
Fuel Design	Local	Radial	Axial				
Appropriate fuel design(s)	n.nn	n.nn	n.nn	n.nnn	n.nnn	nnn.n	1.nn

7. Selected Margin Improvement Options

Recirculation pump trip: (a)

Rod withdrawal limiter: (a)

Thermal power monitor: (a)

Improved scram time: (a)

Exposure dependent limits: (a)

Exposure points analyzed: (n)

8. Operating Flexibility Options

The options shown below indicated as "yes" are included in the analysis scope areas identified in this supplemental reload licensing report:

Extended Operating Domain (a)

- Extended load line limit:
- Maximum extended load line limit:
- Maximum extended operating domain:
- Maximum extended load line limit Plus[1]

} Only the one selected will be reported, along with the minimum core flow at rated power.

Minimum core flow at rated power [nnn] %

Increased Core Flow (a)

Flow point analyzed throughout cycle: [nnn] %

Feedwater Temperature Reduction: (a) if yes, then . . .

FW temperature reduction during cycle: ((n) °F)

Final feedwater temperature reduction: ((n) °F)

ARTS Program: (a)

Single–loop operation: (a)

Out–of–service Options (only those selected will be listed)

Turbine bypass system out–of–service: (a)

Safety/relief valves out–of–service: (a) (Credit taken for (n) of (n) valves)

ADS out–of–service (OOS): (a)

End–of–cycle recirculation pump trip OOS: (a)

Main steam line isolation valves OOS: (a)

[1] Maximum extended load line limit Plus (MELLLA+) is currently being reviewed by the NRC, and is listed here only as a future option. Future options when approved will be incorporated into this report.

9. Core–wide AOO Analysis Results

Methods Used: (a) and (a)[2]

Exposure: BOC to EOC – (n) MWd/MT ((n) MWd/ST)				
Event	**Flux % NBR**	**Q/A % NBR**	**Uncorrected ΔCPR Appropriate Fuel Design(s)**	**Figure**
Limiting pressure and power increase transient	[nnn]	[nnn]	[0.nn]	(n)
Limiting coolant temperature decrease transient	[nnn]	[nnn]	[0.nn]	(n)
Feedwater controller failure	[nnn]	[nnn]	[0.nn]	(n)
Pressure regulator failure downscale (BWR 6)	[nnn]	[nnn]	[0.nn]	(n)

Exposure: EOC – (n) MWd/MT ((n) MWd/ST) to EOC				
Event	**Flux % NBR**	**Q/A % NBR**	**Uncorrected ΔCPR Appropriate Fuel Design(s)**	**Figure**
Limiting pressure and power increase transient	[nnn]	[nnn]	[0.nn]	(n)
Limiting coolant temperature decrease transient	[nnn]	[nnn]	[0.nn]	(n)
Feedwater controller failure	[nnn]	[nnn]	[0.nn]	(n)
Pressure regulator failure downscale (BWR 6)	[nnn]	[nnn]	[0.nn]	(n)

[2] GENESIS, GEMINI or TRACG; GEXL or GEXL–Plus.

10. Local Rod Withdrawal Error (With Limiting Instrument Failure) Transient Summary[3]

Limiting Rod Pattern: Figure (n)[4]

Rod Block Reading	Rod Position[5] (ft. withdrawn)	ΔCPR Appropriate Fuel Design(s)
[nnn]	[n.n]	[n.n]
[nnn]	[n.n]	[n.n]

Setpoint Selected: [nnn]

[3] If plant has ARTS, this section is replaced with a reference to the ARTS document.

[4] If the generic rod withdrawal error analysis is used, this figure is not reported.

[5] If the generic rod withdrawal error analysis is used, rod position and ΔCPR are not reported.

11. Cycle MCPR Values

Safety limit: 1.nn

Single loop operation safety limit: 1.nn

This plant satisfies the requirements to classify the fuel loading error events (both mislocated bundle and misoriented bundle) as an Infrequent Incident; therefore, cycle specific loading event analyses are not required. NRC approval is documented in NEDE-24011-P-A-US.

Or: The fuel loading event MCPR values are included in the following table.

Non–Pressurization Events:

Exposure Range: BOC to EOC	
	Appropriate Fuel Design(s)
Limiting coolant temperature decrease transient	1.nn
Fuel loading error	1.nn
Rod withdrawal error	1.nn

Pressurization Events:

Exposure range: BOC to EOC – (n) MWd/MT ((n) MWd/ST)		
	Option A Appropriate Fuel Design(s)	**Option B Appropriate Fuel Design(s)**
Limiting pressure and power increase event	1.nn	1.nn
Feedwater controller failure	1.nn	1.nn
Pressure regulator failure downscale (BWR 6)	1.nn	1.nn
Exposure range: EOC – (n) MWd/MT ((n) MWd/ST) to EOC		
Limiting pressure and power increase event	1.nn	1.nn
Feedwater controller failure	1.nn	1.nn
Pressure regulator failure downscale (BWR 6)	1.nn	1.nn

12. Overpressurization Analysis Summary

Transient	P_{sl} (psig)	P_v (psiv)	Plant Response
MSIV closure (flux scram)	[nnnn]	[nnnn]	Figure (n)

13. Loading Error Results

This plant satisfies the requirements to classify the fuel loading events (both mislocated bundle and misoriented bundle) as an Infrequent Incident; therefore, cycle specific loading event analyses are not required. NRC approval is documented in NEDE-24011-P-A-US.

Or: The event ΔCPR value is included in the following table.

Variable water gap misoriented bundle analysis: (a)

Event	ΔCPR
(a)	0.[nnn]

14. Control Rod Drop Analysis Results [6]

Plant specific analysis results:

Resultant peak enthalpy, cold:	[nnn.n]
Resultant peak enthalpy, HSB:	[nnn.n]

15. Stability Analysis Results

Plant stability option implementation should be stated, and reference made to NRC–approved licensing topical reports, including where appropriate, plant–specific stability reports. Plant specific analysis results or reconfirming analysis results for each cycle, where required, will be presented and applicable figures included.

[6] For banked position withdrawal sequence plant an analysis of control rod drop need not be performed. NRC approval is documented in NEDE-24011-P-A-14-US, May 2000.

16. Loss–of–coolant Accident Results [7]

LOCA method used:

SAFE/REFLOOD/CHASTE: (a)

SAFER/GESTR–LOCA: (a)

Reference: Individual plant LOCA document (as amended). Single loop operation MAPLHGR multiplier, 0.[nn], is included where applicable.

(For those plants without an ECCS report separate from the FSAR use the following format):

LOCA method used:

SAFE/REFLOOD/CHASTE: (a)

SAFER/GESTR–LOCA: (a)

Bundle Type:

Average Planar Exposure		MAPLHGR (kw/ft)		PCT (°F)	Oxidation Fraction
(GWd/ST)	(GWd/MT)	Most Limiting	Least Limiting		
0.0	0.0	[nn.nn]	[nn.nn]	—	—
0.2	0.2	.	.	[nnnn]	[n.nnn]
1.0	1.1	.	.	.	.
5.0	5.5	.	.	.	.
10.0	11.0	.	.	.	.
15.0	16.5	.	.	.	.
20.0	22.0	.	.	.	.
25.0	27.6	.	.	.	.
35.0	38.6	.	.	.	.
45.0	49.6	.	.	.	.
50.0	55.0	.	.	.	.
55.0	60.5	[nn.nn]	[nn.nn]	[nnnn]	[n.nnn]

[7] This section to include the MAPLHGR multiplier for single loop operation except for plants having the ARTS option or the MEOD option and for all BWR6 plants.

List of Figures