

RAS 12258

DOCKET NUMBER  
PROD. & UTIL. FAC. 50-271-0LA



**Global Nuclear Fuel**  
A Joint Venture of GE, Toshiba, & Hitachi

0000-0035-6443-SRLR  
Revision 0  
Class I  
December 2005

**Supplemental Reload Licensing Report**  
for  
**Vermont Yankee Nuclear Power Station**  
Reload 24 Cycle 25  
(with Extended Power Uprate)

DOCKETED  
USNRC  
2006 SEP 19 PM 3:36  
OFFICE OF THE SECRETARY  
ADJUDICATIONS STAFF

**U.S. NUCLEAR REGULATORY COMMISSION**

In the Matter of Entergy Nuclear Vermont Yankee L.L.C.

Docket No. 50-271 Official Exhibit No. Entergy 8

OFFERED by: Applicant/Licensee Intervenor \_\_\_\_\_

NRC Staff \_\_\_\_\_ Other \_\_\_\_\_

IDENTIFIED on 9/13/06 Witness/Panel Nichols/Casillas

Action Taken: ADMITTED REJECTED WITHDRAWN

Reporter/Clerk: HAC

Template = secy-028

SECY-02

**8. Operating Flexibility Options<sup>4</sup>**

The following information presents the operational domains and flexibility options which are supported by the reload licensing analysis. Inclusion of these results in this report is not meant to imply that these domains and options have been fully licensed and approved for operation.

<b>Extended Operating Domain (EOD):</b>	Yes
EOD type: Maximum Extended Load Line Limit (MELLLA)	
Minimum core flow at rated power:	99.0 %
<b>Increased Core Flow:</b>	Yes
Flow point analyzed throughout cycle:	107.0 %
<b>Feedwater Temperature Reduction:</b>	No
<b>ARTS Program:</b>	Yes
<b>Single Loop Operation:</b>	Yes
<b>Equipment Out of Service:</b>	
Safety/relief valves Out of Service: (credit taken for 3 of 4 relief valves (1 RV OOS))	Yes

**9. Core-wide AOO Analysis Results<sup>5</sup>**

Methods used: GEMINI, GEXL-PLUS

Operating domain: ICF (HBB)				
Exposure range : BOC to MOC ( Application Condition: 1 )				
Event	Flux (%rated)	Q/A (%rated)	Uncorrected ΔCPR	
			GE14C	Fig.
FW Controller Failure	354	121	0.26	2
Load Rejection w/o Bypass	382	119	0.28	3
Turbine Trip w/o Bypass	372	118	0.27	4
Inadvertent HPCI /L8	347	123	0.27	5

<sup>4</sup> Refer to GESTAR for those operating flexibility options that are referenced and supported within GESTAR.

<sup>5</sup> Exposure range designation is defined in Table 7-1. Application condition number is defined in Section 11.

Operating domain: ICF (HBB)				
Exposure range : MOC to EOC ( Application Condition: 1 )				
			Uncorrected ΔCPR	
Event	Flux (%rated)	Q/A (%rated)	GE14C	Fig.
FW Controller Failure	379	123	0.26	6
Load Rejection w/o Bypass	400	120	0.27	7
Turbine Trip w/o Bypass	395	120	0.27	8
Inadvertent HPCI /L8	372	125	0.27	9

Operating domain: MELLLA (HBB)				
Exposure range : BOC to MOC ( Application Condition: 1 )				
			Uncorrected ΔCPR	
Event	Flux (%rated)	Q/A (%rated)	GE14C	Fig.
FW Controller Failure	314	119	0.25	10
Load Rejection w/o Bypass	328	116	0.26	11
Turbine Trip w/o Bypass	331	116	0.25	12
Inadvertent HPCI /L8	306	121	0.25	13

Operating domain: MELLLA (HBB)				
Exposure range : MOC to EOC ( Application Condition: 1 )				
			Uncorrected ΔCPR	
Event	Flux (%rated)	Q/A (%rated)	GE14C	Fig.
FW Controller Failure	328	120	0.25	14
Load Rejection w/o Bypass	337	117	0.26	15
Turbine Trip w/o Bypass	340	117	0.25	16
Inadvertent HPCI /L8	324	122	0.26	17

Operating domain: ICF (UB) Exposure range : MOC to EOC ( Application Condition: 1 )				
			Uncorrected ΔCPR	
Event	Flux (%rated)	Q/A (%rated)	GE14C	Fig.
FW Controller Failure	250	115	0.25	18
Load Rejection w/o Bypass	301	114	0.27	19
Turbine Trip w/o Bypass	278	114	0.26	20
Inadvertent HPCI /L8	247	118	0.26	21

Operating domain: MELLLA (UB) Exposure range : MOC to EOC ( Application Condition: 1 )				
			Uncorrected ΔCPR	
Event	Flux (%rated)	Q/A (%rated)	GE14C	Fig.
FW Controller Failure	213	113	0.22	22
Load Rejection w/o Bypass	260	111	0.24	23
Turbine Trip w/o Bypass	238	112	0.24	24
Inadvertent HPCI /L8	207	115	0.23	25

**10. Local Rod Withdrawal Error (With Limiting Instrument Failure) AOO Summary**

Rod withdrawal error (RWE) limits with ARTS are reported in *Vermont Yankee Nuclear Power Station APRM/RBM/Technical Specifications / Maximum Extended Load Line Limit Analysis (ARTS/MELLLA)*, NEDC-33089P, March 2003. A statistically based RWE limit of 1.40 is established in the *Statistically Based Rod Withdrawal Error Analysis for Vermont Yankee Nuclear Power Station*, GE-NE-0000-0016-3451-R0, July 2003.

A cycle specific analysis was performed for Vermont Yankee Cycle 25 to determine the MCPR corresponding to full withdrawal. (RBM was not credited in this analysis.) For the exposure range from BOC25 to EOC25, it is concluded that the statistically based RWE analysis value of 1.40 bounds the Cycle 25 specific analysis value. Therefore, it is the statistically based value that is reported in Section 11 of the SRLR.

The RBM operability requirements specified in Section 3.4 of ARTS Report NEDC-33089P have been evaluated and shown to be sufficient to ensure that the Safety Limit MCPR and cladding 1% plastic strain criteria will not be exceeded in the event of an unblocked RWE event.

Operating domain: MELLLA (HBB) Exposure range : MOC to EOC ( Application Condition: 1 )		
	Option A	Option B
	GE14C	GE14C
FW Controller Failure	1.54	1.37
Load Rejection w/o Bypass	1.55	1.38
Turbine Trip w/o Bypass	1.55	1.38
Inadvertent HPCI /L8	1.55	1.38

Operating domain: ICF (UB) Exposure range : MOC to EOC ( Application Condition: 1 )		
	Option A	Option B
	GE14C	GE14C
FW Controller Failure	1.54	1.37
Load Rejection w/o Bypass	1.57	1.40
Turbine Trip w/o Bypass	1.56	1.39
Inadvertent HPCI /L8	1.55	1.38

Operating domain: MELLLA (UB) Exposure range : MOC to EOC ( Application Condition: 1 )		
	Option A	Option B
	GE14C	GE14C
FW Controller Failure	1.51	1.34
Load Rejection w/o Bypass	1.53	1.36
Turbine Trip w/o Bypass	1.53	1.36
Inadvertent HPCI /L8	1.52	1.35

**12. Overpressurization Analysis Summary**

Event	Psl (psig)	Pdome (psig)	Pv (psig)	Plant Response
MSIV Closure (Flux Scram) - ICF (HBB)	1302	1303	1328	Figure 26
MSIV Closure (Flux Scram) - MELLLA (HBB)	1299	1300	1324	Figure 27