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**GE Hitachi Nuclear Energy**

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June 20, 2018

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D. C. 20555-001

**Subject: GEH Annual Shutdown Reactor Report Supplement for the Year 2017**

**References:** 1) License DPR-1, Docket 50-18 (VBWR), License DR-10, Docket 50-183 (EVESR), License TR-1, Docket 50-70 (GETR)  
2) Letter, M. Feyrer (GEH) to NRC Document Control Desk "GEH Annual Shutdown Reactor Reports for the Year 2017, 3/29/18"

Enclosed is a supplement to the 2018 Annual Report (Reference 2) for the deactivated Vallecitos Boiling Water Reactor (VBWR), located at the GE Hitachi, Vallecitos Nuclear Center near Sunol, California.

If there are any questions or additional information is required, please contact me at the number above.

Sincerely,

Matt Feyrer, Site Manager  
Vallecitos Nuclear Center

**Enclosure: VBWR Annual Report No. 53, Supplement dated June 2018**

cc: NRC Region IV Administrator  
J. Parrott, NRC NMSS  
MJF 18-007



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GE Hitachi Nuclear Energy

*Vallecitos Nuclear Center  
Sunol, California*

**VALLECITOS BOILING WATER REACTOR  
(DEACTIVATED)**

**ANNUAL REPORT NO. 53  
FOR THE YEAR 2017**

**LICENSE DPR-1  
DOCKET 50-18**

**June 2018**

**Vallecitos Boiling Water Reactor  
(Deactivated)**

**Annual Report No. 53**

GE Hitachi Nuclear Energy has maintained the Vallecitos Boiling Water Reactor (VBWR) in a deactivated status under the authority of Amendment No. 21 to License DPR-1, Docket 50-18, issued Oct 22, 2007. In this annual report, a summary of the status of the facility for the period of January 1, 2017 to December 31, 2017 is presented, as required by paragraph 5.d.2 of the license.

**1.0 SUMMARY**

All reactor systems have been removed from the containment except for the reactor vessel. The water level within the reactor vessel was monitored and has remained essentially constant throughout the report period.

Radiation and contamination levels remain at acceptable levels. Environmental data is maintained on site and available for review.

**2.0 STATUS OF FACILITY**

In accordance with written procedures, the Facility Manager controls access to the containment building and general systems. The facility continues to be in deactivated status in safe storage condition.

**3.0 RADIATION AND CONTAMINATION**

Complete radiation and contamination surveys of the facility indicate that levels remain low. Results of the surveys are presented in attachment 1. Air sampling results are presented in attachment 2. The radiation/contamination levels listed are representative but not necessarily maximum values.

During the 2017 annual inspection in December a small volume of water was found in the basement of the VBWR containment. Due to this volume of water, no direct surveys or smears were taken in this particular area. In April, another entry was made to re-inspect the area. As water was still present, a sample was taken for analysis with the results attached below. In

addition, CR#28719 was initiated to track this issue to resolution. Action items include removing water from the containment basement as well as a formal evaluation of how the water entered into this area. This evaluation is beginning in late June, early July.

Month	Gross beta $\mu\text{Ci/mL}$	Gross Alpha $\mu\text{Ci/mL}$	Tritium $\mu\text{Ci/mL}$
April 2018	3.46E-07	8.66E-08	<MDC

#### 4.0 ACTIVITIES

Routine inspections were conducted during this report period. No other significant activities occurred at VBWR.

#### 5.0 ORGANIZATION

The organizational structure remained unchanged during 2017. The Site Manager remains M. J. Feyrer. The VBWR Facility Manager remains M. R. Schrag. The Manager, Regulatory Compliance and EHS, T. M. Leik, retired January 2018. J. G. Ayala is currently Acting Manager, Regulatory Compliance and EHS.

#### 6.0 CONCLUSION

GE Hitachi Nuclear Energy concludes that the deactivated VBWR is being maintained in a safe shutdown condition. The inspections, access control, and administratively controlled activities ensure maximum protection for the public health and safety. The procedures will be continued to maintain this high level of protection.

GE Hitachi Nuclear Energy  
Vallecitos Operations

  
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M. J. Feyrer  
Manager Vallecitos Nuclear Center

**HITACHI**

VALLECITOS NUCLEAR CENTER  
 NUCLEAR SAFETY SURVEY RECORD

SURVEYOR (print and sign) Name and signatures on Original at GEH Vallecitos	REVIEWER	NO. D-0105
LOCATION VBWR Containment		DATE: 12/09/17
		TIME: 0930

<input checked="" type="checkbox"/> Routine	REASON Annual Survey														
<input type="checkbox"/> Special															
Item No.	ITEMS OR LOCATION	DOSE RATE				Distance	DIRECT READING				SMEAR READINGS				AREA
		$\beta$ mRad/h	$\gamma$ mR/h	n mRem/h	TOTAL mRem/h		$\beta\gamma$ CPM	$\beta\gamma$ dPM	$\alpha$ CPM	$\alpha$ dPM	$\beta\gamma$ CPM	$\beta\gamma$ dPM	$\alpha$ CPM	$\alpha$ dPM	
1	Main Floor - General Area		<1		<1	F					<100	<500	<20	<200	100 cm <sup>2</sup>
2	- Area Over Reactor Vessel		<1		<1	F					<100	<500	<20	<200	100 cm <sup>2</sup>
3															
4	Basement - General Area*														
5	- Sump*														
6															
7	Reactor Vessel Head Area		<1		<1	F					<100	<500	<20	<200	100 cm <sup>2</sup>
8															
9	Top of Fuel Pool		<1		<1	F					<100	<500	<20	<200	100 cm <sup>2</sup>
10															
11	Personnel Air Lock		<1		<1	F					<100	<500	<20	<200	100 cm <sup>2</sup>
12															
13	Equipment Air Lock		<1		<1	F					<100	<500	<20	<200	100 cm <sup>2</sup>
14															
15															
16															
INSTRUMENT USED			PRM - 7	CP - 5	RO - 20	PNR - 4	TBM -	E - 120	RM -	RM -	PAC - 1SA	LUDLUM-12			
SERIAL NUMBER					4549			1385			897				
Area Posted: (circle applicable) RA HRA CA RMA AIRBORNE						PROBE	$\alpha$ AC - 3A (U)	10%	<input checked="" type="checkbox"/>	PROBE	$\beta\gamma$ PANCAKE	20%	<input checked="" type="checkbox"/>		
COMMENTS * No entry to basement due to rain water in basement.						EFF	$\alpha$ 43 - 4 (U)	10%		EFF					
						(4 P				(4 P					
						GEO.)				GEO.)					

**ATTACHMENT 2: Air Sample Data for Vallecitos Reactor Annual Inspection 2017**

Reactor	Location	Sample Volume (ml)	Initial				1 Hour Decay				24/48 Hour Decay			
			Alpha		Beta		Alpha		Beta		Alpha		Beta	
			ncpm	uCi/ml	ncpm	uCi/ml	ncpm	uCi/ml	ncpm	uCi/ml	ncpm	uCi/ml	ncpm	uCi/ml
VBWR	First Floor	2.83E+06	1281.30	6.22E-10	3323.20	1.68E-09	541.10	2.63E-10	1221.80	5.93E-10	2.80	1.36E-12	8.60	4.34E-12
	Basement	2.83E+06	1562.70	7.59E-10	4024.50	2.03E-09	805.50	3.91E-10	1827.70	8.87E-10	0.60	2.91E-13	5.80	2.93E-12
	Fuel Pool	2.83E+06	1826.10	8.87E-10	4696.60	2.37E-09	811.70	3.94E-10	1855.40	9.01E-10	1.10	5.34E-13	11.10	5.61E-12
EVESR	First Floor	2.83E+06	5906.20	2.87E-09	16961.60	8.57E-09	2885.60	1.40E-09	6429.30	3.12E-09	2.30	1.12E-12	5.00	2.53E-12
	Basement	2.83E+06	4734.50	2.30E-09	12859.00	6.50E-09	2424.70	1.18E-09	5572.80	2.71E-09	1.20	5.83E-13	42.70	2.16E-11
	519' Level	2.83E+06	4021.00	1.95E-09	10887.10	5.50E-09	2119.60	1.03E-09	4804.20	2.33E-09	1.60	7.77E-13	5.70	2.88E-12
GETR	First Floor	2.83E+06	1689.80	8.21E-10	4508.90	2.28E-09	628.80	3.05E-10	1397.40	6.79E-10	5.30	2.57E-12	15.50	7.83E-12
	Basement	2.83E+06	1645.90	7.99E-10	4496.20	2.27E-09	764.30	3.71E-10	1741.70	8.46E-10	1.10	5.34E-13	17.00	8.59E-12
	Third Floor	2.83E+06	1455.10	7.07E-10	3746.50	1.89E-09	798.90	3.88E-10	1859.80	9.03E-10	1.00	4.86E-13	23.70	1.20E-11

**Tennelec System "B" Efficiency & Conversion Factors**

Alpha Efficiency	32.76%
Beta Efficiency	31.49%
dpm/uCi	2.22E+06
Alpha cpm/uCi	7.27E+05
Beta cpm/uCi	6.99E+05

Sampling Information										Initial	1 Hr	Approx.	
Reactor	Location	Date Sampled	Time On	Time Off	Minutes sampled	Flow Rate (cfm)	Total Flow (ft <sup>3</sup> )	ml/ft <sup>3</sup>	Total Sample Volume (ml)	Sample	Sample	Minutes	Half-Life
										Time	Time	Decay	(min.)
VBWR	First Floor	12/8/2017	16:15	16:35	20	5	100.0	28317	2.83E+06	16:45	17:35	50	40.2
VBWR	Basement	12/9/2017	9:23	9:43	20	5	100.0	28317	2.83E+06	9:56	10:40	44	46.0
VBWR	Fuel Pool	12/9/2017	9:00	9:20	20	5	100.0	28317	2.83E+06	9:30	10:18	48	41.0
EVESR	First Floor	12/8/2017	16:40	17:00	20	5	100.0	28317	2.83E+06	17:10	18:00	50	48.4
EVESR	Basement	12/9/2017	10:12	10:32	20	5	100.0	28317	2.83E+06	10:47	11:32	45	46.6
EVESR	519' Level	12/9/2017	9:50	10:10	20	5	100.0	28317	2.83E+06	10:30	11:10	40	43.3
GETR	First Floor	12/8/2017	17:15	17:35	20	5	100.0	28317	2.83E+06	17:45	18:35	50	35.1
GETR	Basement	12/9/2017	7:18	7:38	20	5	100.0	28317	2.83E+06	7:48	8:38	50	45.2
GETR	Third Floor	12/9/2017	7:41	8:01	20	5	100.0	28317	2.83E+06	8:21	9:00	39	45.1