



HITACHI

GE Hitachi Nuclear Energy

Matt J. Feyrer
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March 29, 2018

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

Subject: GEH Annual Shutdown Reactor Reports for the Year 2017

References: License DPR-1, Docket 50-18 (VBWR), License DR-10, Docket 50-183 (EVESR), License TR-1, Docket 50-70 (GETR)

Enclosed are the 2018 Annual Reports for the deactivated Reactors (Vallecitos Boiling Water Reactor (VBWR), ESADA-Vallecitos Experimental Superheat Reactor (EVESR), and the General Electric Test Reactor (GETR)) located at the GE Hitachi, Vallecitos Nuclear Center near Sunol, California.

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

Sincerely,

Matt Feyrer, Site Manager
Vallecitos Nuclear Center

Enclosures: VBWR Annual Report No. 53, EVESR Annual Report No. 50, and GETR Annual Report No. 59

cc: NRC Region IV Administrator
J. Parrott, NRC NMSS
MJF 18-003



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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**

MARCH 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.

4.0 ACTIVITIES

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

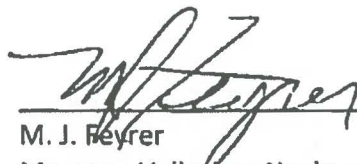
5.0 ORGANIZATION

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



M. J. Feyrer
Manager Vallecitos Nuclear Center

**HITACHI**

VALLECITOS NUCLEAR CENTER
NUCLEAR SAFETY SURVEY RECORD

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

<input checked="" type="checkbox"/> Routine		REASON													
<input type="checkbox"/> Special		Annual Survey													
ITEMS OR LOCATION		DOSE RATE					DIRECT READING				SMEAR READINGS				
Item No.		β mRad/h	γ mR/h	n mRem/h	TOTAL mRem/h	Distance	$\beta \gamma$ CPM	$\beta \gamma$ dPM	α CPM	α dPM	$\beta \gamma$ CPM	$\beta \gamma$ dPM	α CPM	α dPM	AREA
1	Main Floor - General Area		<1		<1	F					<100	<500	<20	<200	100 cm ²
2	- Area Over Reactor Vessel		<1		<1	F					<100	<500	<20	<200	100 cm ²
3															
4	Basement - General Area*		N/A		N/A	F					<100	<500	<20	<200	100 cm ²
5	- Sump*		N/A		N/A	C					<100	<500	<20	<200	100 cm ²
6															
7	Reactor Vessel Head Area		<1		<1	F					<100	<500	<20	<200	100 cm ²
8															
9	Top of Fuel Pool		<1		<1	F					<100	<500	<20	<200	100 cm ²
10															
11	Personnel Air Lock		<1		<1	F					<100	<500	<20	<200	100 cm ²
12															
13	Equipment Air Lock		<1		<1	F					<100	<500	<20	<200	100 cm ²
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	α AC - 3A (U) 10%		X	PROBE	$\beta \gamma$ PANCAKE 20%		X	
COMMENTS							EFF.	α 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 ³)	ml/ft ³	Total Sample Volume (ml)	Sample Time	Sample Time	Half-Life (min.)
VBWR	First Floor	12/6/2017	16:10	16:30	20	5	100.0	28317	2.83E+06	16:45	17:35	40.2
VBWR	Basement	11/2/2016	10:07	10:27	20	5	100.0	28317	2.83E+06	9:56	10:40	46.0
VBWR	Fuel Pool	11/2/2016	9:45	10:05	20	5	100.0	28317	2.83E+06	9:30	10:18	41.0
EVESR	First Floor	11/1/2016	9:00	9:20	20	5	100.0	28317	2.83E+06	17:10	18:00	48.4
EVESR	Basement	11/2/2016	12:58	13:18	20	5	100.0	28317	2.83E+06	10:47	11:32	46.6
EVESR	519' Level	11/2/2016	12:35	12:55	20	5	100.0	28317	2.83E+06	10:30	11:10	43.3
GETR	First Floor	11/2/2016	14:13	14:33	20	5	100.0	28317	2.83E+06	17:45	18:35	35.1
GETR	Basement	11/2/2016	14:36	14:56	20	5	100.0	28317	2.83E+06	7:48	8:38	45.2
GETR	Third Floor	11/2/2016	15:00	15:20	20	5	100.0	28317	2.83E+06	8:21	9:00	45.1



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GE Hitachi Nuclear Energy

*Vallecitos Nuclear Center
Sunol, California*

**ESADA-VALLECITOS EXPERIMENTAL
SUPERHEAT REACTOR
(DEACTIVATED)**

**ANNUAL REPORT NO. 50
FOR THE YEAR 2017**

**LICENSE DR-10
DOCKET 50-183**

MARCH 2018

**ESADA-Vallecitos Experimental Superheat Reactor
(Deactivated)**

ANNUAL REPORT NO. 50

GE Hitachi Nuclear Energy (GEH) has maintained the ESADA Vallecitos Experimental Superheat Reactor (EVESR) in a deactivated status under the authority of Amendment No. 7 to License DR-10, Docket 50-183, issued December 1, 2008. 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 Amendment 7, Appendix A, Technical Specifications, section C. 1.

1.0 SUMMARY

Component removal activities began in 2008 above the 549 foot level. Tech Spec changes issued in Amendment 7 December 1, 2008 authorize the removal of systems beside the reactor vessel and bio-shield below the 549 level. Component removal concluded (current scope) in 2010. Entry into the containment building was made for routine radiation surveys and a general examination of conditions throughout the building. In accordance with written procedures, the Facility Manager controls access to the containment building.

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

2.0 STATUS OF FACILITY

The facility continues to be in deactivated status. The plugs to the reactor vessel and head storage shield, the wooden cover over the fuel storage pool remain in place.

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.

4.0 ACTIVITIES

Routine inspections were conducted during this report period.

The equipment disposal concluded during 2010.

5.0 ORGANIZATION

The organizational structure remained unchanged during 2017. The Site Manager remains M. J. Feyrer. The EVESR 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 ESADA-Vallecitos Experimental Superheat Reactor 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



M. J. Feyrer
Manager Vallecitos Nuclear Center

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VALLECITOS NUCLEAR CENTER
NUCLEAR SAFETY SURVEY RECORD

SURVEYOR (print and sign) Name and signatures on Original at GEH Vallecitos		REVIEWER	NO. D-0106
LOCATION EVESR Containment		DATE: 12/09/17	TIME: 1030

<input checked="" type="checkbox"/> Routine <input type="checkbox"/> Special		REASON Annual Survey													
ITEMS OR LOCATION		DOSE RATE					DIRECT READING				SMEAR READINGS				
Item No.		β mRad/h	γ mR/h	n mRem/h	TOTAL mRem/h	Distance	$\beta \gamma$ CPM	$\beta \gamma$ dPM	α CPM	α dPM	$\beta \gamma$ CPM	$\beta \gamma$ dPM	α CPM	α dPM	AREA
1	Top of Spent Fuel Pool (Main Floor)		<1		<1	F					<100	<500	<20	<200	100 cm ²
2															
3	487' Level (Basement)		<1		<1	F					150	750	<20	<200	100 cm ²
4	503' Level		<1		<1	F					<100	<500	<20	<200	100 cm ²
5	519' Level		<1		<1	F					<100	<500	<20	<200	100 cm ²
6	534' Level - General Area		<1		<1	F					<100	<500	<20	<200	100 cm ²
7															
8	- Emergency Cooling Valves		3		3	C									
9	549' Level		<0.5		<0.5	F					<100	<500	<20	<200	100 cm ²
10															
11	Equipment Air Lock		<0.5		<0.5	F					<100	<500	<20	<200	100 cm ²
12	Personnel Air Lock		<0.5		<0.5	F					<100	<500	<20	<200	100 cm ²
13															
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	α AC - 3A (U) 10%		X	PROBE	$\beta \gamma$ PANCAKE 20%		X	
COMMENTS							EFF.	α 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 ³)	ml/ft ³	Total Sample Volume (ml)	Sample Time	Sample Time	Half-Life
VBWR	First Floor	12/6/2017	16:10	16:30	20	5	100.0	28317	2.83E+06	16:45	17:35	40.2
VBWR	Basement	11/2/2016	10:07	10:27	20	5	100.0	28317	2.83E+06	9:56	10:40	46.0
VBWR	Fuel Pool	11/2/2016	9:45	10:05	20	5	100.0	28317	2.83E+06	9:30	10:18	41.0
EVESR	First Floor	11/1/2016	9:00	9:20	20	5	100.0	28317	2.83E+06	17:10	18:00	48.4
EVESR	Basement	11/2/2016	12:58	13:18	20	5	100.0	28317	2.83E+06	10:47	11:32	46.6
EVESR	519' Level	11/2/2016	12:35	12:55	20	5	100.0	28317	2.83E+06	10:30	11:10	43.3
GETR	First Floor	11/2/2016	14:13	14:33	20	5	100.0	28317	2.83E+06	17:45	18:35	35.1
GETR	Basement	11/2/2016	14:36	14:56	20	5	100.0	28317	2.83E+06	7:48	8:38	45.2
GETR	Third Floor	11/2/2016	15:00	15:20	20	5	100.0	28317	2.83E+06	8:21	9:00	45.1



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GE Hitachi Nuclear Energy

*Vallecitos Nuclear Center
Sunol, California*

**GENERAL ELECTRIC TEST REACTOR
(DEACTIVATED)**

**ANNUAL REPORT NO. 59
FOR THE YEAR 2017**

**LICENSE TR-1
DOCKET 50-70**

MARCH 2018

**General Electric Test Reactor
(Deactivated)**

ANNUAL REPORT NO. 59

GE Hitachi (GEH) has maintained the General Electric Test Reactor (GETR) in a deactivated status under the authority of Amendment No. 17 to License TR-1, Docket 50-70, issued October 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.

1.0 SUMMARY

The facility remains in essentially the same condition described in Annual Report No. 54. Entry into the reactor building was made for routine radiation surveys and a general examination of conditions throughout the building. The crane, elevator, and ventilation were serviced and tested in 2011 in anticipation of beginning remediation activities. Such activities have not begun.

Radiation and contamination levels remain at acceptable levels.

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. There were no changes authorized by the Facility Manager pursuant to 10CFR50.59(a) in 2017.

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.

The data below are from sample and dosimeter results accumulated during 2017. These data are for the entire VNC site and include the effects of operations other than GETR.

3.1 GETR Stack

Although maintenance was performed on the stack in 2011, and the stack was tested, there has been no remediation effort performed for the GETR reactor. The ventilation system is operational, but not currently in use. The ventilation system was not operated in 2017.

3.2 Gamma Radiation

The yearly dose results for the year 2017 as determined from evaluation of site perimeter environmental monitoring dosimeters showed no departure from normal stable backgrounds.

3.3 Vegetation

No alpha, beta or gamma activity attributable to activities at the GETR facility was found on or in vegetation in the vicinity of the site.

3.4 GETR Well

Analytical results of groundwater samples collected from the B-2 (GETR) well during the reporting periods. The March 2018 sample was collected due to a considerable amount of sediment found in the December 2017 sample. We will continue to monitor the results and perform a gamma scan on the sample if necessary.

Month	Gross beta pCi/L	Gross Alpha pCi/L	Tritium pCi/L
June 2017	4.49	1.70	1656
December 2017	2.69	25.57	133
March 2018	0.00	8.86	949

4.0 ACTIVITIES

Routine inspections were conducted during this report period. There were no preventive or corrective maintenance activities performed having safety significance during the reporting period.

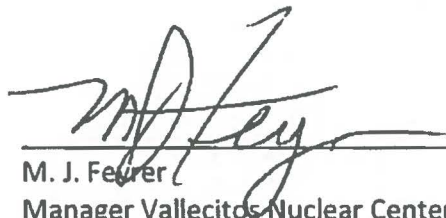
5.0 ORGANIZATION

The organizational structure remained unchanged during 2017. The Site Manager remains M. J. Feyrer. The GETR 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 GETR 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



M. J. Feyrer
Manager Vallecitos Nuclear Center

**HITACHI**

VALLECITOS NUCLEAR CENTER
NUCLEAR SAFETY SURVEY RECORD

SURVEYOR (print and sign)

REVIEWER

NO.

Name and signatures on Original at GEH Vallecitos

C-041

LOCATION

DATE:

12/09/17

200 Area GETR Containment (page 1 of 2)

TIME:

0800

☒ Routine
☐ Special

REASON

Annual Survey

ITEMS OR LOCATION		DOSE RATE					DIRECT READING				SMEAR READINGS				
Item No.		β mRad/h	γ mR/h	n mRem/h	TOTAL mRem/h	Distance	$\beta \gamma$ CPM	$\beta \gamma$ dPM	α CPM	α dPM	$\beta \gamma$ CPM	$\beta \gamma$ dPM	α CPM	α dPM	AREA
1	Personnel Air Lock		<1		<1	F					<100	<500	<20	<200	100 cm ²
2	Equipment Air Lock		<1		<1	F					<100	<500	<20	<200	100 cm ²
3	Personnel Air Lock SOP										<100	<500	<20	<200	100 cm ²
4	1st Floor - Clean Area *		<1		<1	F					<100	<500	<20	<200	100 cm ²
5	- Zone Area *		<1-4		<1-4	F					<100	<500	<20	<200	100 cm ²
6	2nd Floor - General Dose Rate		<1-1		<1-1	F									
7	- EEHS Cubicle Door		8		8	C									
8	- Field Reading Around EEHS Cubicle		<1-2		<1-2	F									
9	- Floor Smear / Clean Area *										<100	<500	<20	<200	100 cm ²
10	- Filter Bank		<1		<1	C									
11	3rd Floor - Zone Area North / Floor *		<1-3		<1-3	F					<100	<500	<20	<200	100 cm ²
12	- Zone Area South		<1		<1	F					600	3000	<20	<200	100 cm ²
13	- Bridge / Canal		1		1	F					800	4000	<20	<200	100 cm ²
14	- Missile Shield Point A *		<1-1.5		<1-1.5	F					<100	<500	<20	<200	100 cm ²
15	- Platform		<1		<1	F					<100	<500	<20	<200	100 cm ²
16	- Clean Area *		<1		<1	F					<100	<500	<20	<200	100 cm ²
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	α AC - 3A (U) 10%			X	PROBE	$\beta \gamma$ PANCAKE 20%			X
COMMENTS * Whatman Smears 3rd floor zone north floor by Pool Svc Pump Cntrl: 28 mR/hr @C						EFF.	α 43 - 4 (U) 10%				EFF.				
						(4 P GEO.)					(4 P GEO.)				

**HITACHI**

VALLECITOS NUCLEAR CENTER
NUCLEAR SAFETY SURVEY RECORD

SURVEYOR (print and sign) Name and signatures on Original at GEH Vallecitos		REVIEWER	NO. C-041
LOCATION 200 Area GETR Containment (page 1 of 2)		DATE: 12/09/17	TIME: 0800

<input checked="" type="checkbox"/> Routine <input type="checkbox"/> Special		REASON Annual Survey														
ITEMS OR LOCATION			DOSE RATE				DIRECT READING				SMEAR READINGS					
Item No.			β mRad/h	γ mR/h	n mRem/h	TOTAL mRem/h	Distance	$\beta \gamma$ CPM	$\beta \gamma$ dPM	α CPM	α dPM	$\beta \gamma$ CPM	$\beta \gamma$ dPM	α CPM	α dPM	AREA
1	Personnel Air Lock			<1		<1	F					<100	<500	<20	<200	100 cm ²
2	Equipment Air Lock			<1		<1	F					<100	<500	<20	<200	100 cm ²
3	Personnel Air Lock SOP											<100	<500	<20	<200	100 cm ²
4	1st Floor - Clean Area *			<1		<1	F					<100	<500	<20	<200	100 cm ²
5	- Zone Area *			<1-4		<1-4	F					<100	<500	<20	<200	100 cm ²
6	2nd Floor - General Dose Rate			<1-1		<1-1	F									
7	- EEHS Cubicle Door			8		8	C									
8	- Field Reading Around EEHS Cubicle			<1-2		<1-2	F									
9	- Floor Smear / Clean Area *											<100	<500	<20	<200	100 cm ²
10	- Filter Bank			<1		<1	C									
11	3rd Floor - Zone Area North / Floor *			<1-3		<1-3	F					<100	<500	<20	<200	100 cm ²
12	- Zone Area South			<1		<1	F					600	3000	<20	<200	100 cm ²
13	- Bridge / Canal			1		1	F					800	4000	<20	<200	100 cm ²
14	- Missile Shield Point A *			<1-1.5		<1-1.5	F					<100	<500	<20	<200	100 cm ²
15	- Platform			<1		<1	F					<100	<500	<20	<200	100 cm ²
16	- Clean Area *			<1		<1	F					<100	<500	<20	<200	100 cm ²
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	α AC - 3A (U)		10%	X	PROBE	$\beta \gamma$ PANCAKE		20%	X
COMMENTS * Whatman Smears 3rd floor zone north floor by Pool Svc Pump Cntrl: 28 mR/hr @C							EFF.	α 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	Flow Rate	Total	ml/ft ³	Total Sample Volume	Sample	Sample	Half-Life
					sampled	(cfm)	Flow (ft ³)		(ml)	Time	Time	Decay (min.)
VBWR	First Floor	12/6/2017	16:10	16:30	20	5	100.0	28317	2.83E+06	16:45	17:35	40.2
VBWR	Basement	11/2/2016	10:07	10:27	20	5	100.0	28317	2.83E+06	9:56	10:40	46.0
VBWR	Fuel Pool	11/2/2016	9:45	10:05	20	5	100.0	28317	2.83E+06	9:30	10:18	41.0
EVESR	First Floor	11/1/2016	9:00	9:20	20	5	100.0	28317	2.83E+06	17:10	18:00	48.4
EVESR	Basement	11/2/2016	12:58	13:18	20	5	100.0	28317	2.83E+06	10:47	11:32	46.6
EVESR	519' Level	11/2/2016	12:35	12:55	20	5	100.0	28317	2.83E+06	10:30	11:10	43.3
GETR	First Floor	11/2/2016	14:13	14:33	20	5	100.0	28317	2.83E+06	17:45	18:35	35.1
GETR	Basement	11/2/2016	14:36	14:56	20	5	100.0	28317	2.83E+06	7:48	8:38	45.2
GETR	Third Floor	11/2/2016	15:00	15:20	20	5	100.0	28317	2.83E+06	8:21	9:00	45.1