



**HITACHI**

GE Hitachi Nuclear Energy

*Vallecitos Nuclear Center  
Sunol, California*

**VALLECITOS BOILING WATER REACTOR  
(DEACTIVATED)**

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**ANNUAL REPORT NO. 51  
FOR THE YEAR 2015**

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

**MARCH 2016**

**Vallecitos Boiling Water Reactor  
(Deactivated)**

**Annual Report No. 51**

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, 2015 to December 31, 2015 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 2015. The Site Manager remains T. A. Caine. The VBWR Facility Manager remains M. R. Schrag. The Manager, Regulatory Compliance and EHS remains T. M. Leik.

## **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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T. A. Caine  
Manager Vallecitos Nuclear Center

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VALLECITOS NUCLEAR CENTER

**NUCLEAR SAFETY SURVEY RECORD**

SURVEYOR (print and sign) Name and signature on original at GEH Vallecitos		REVIEWER	NO. D-054
LOCATION VBWR Containment		DATE: 11/14/15	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.		$\beta$ mRad/h	$\gamma$ mR/h	n mRem/h	TOTAL mRem/h	Distance	$\beta \gamma$ CPM	$\beta \gamma$ dPM	$\alpha$ CPM	$\alpha$ dPM	$\beta \gamma$ CPM	$\beta \gamma$ dPM	$\alpha$ CPM	$\alpha$ dPM	AREA
1	Main Floor - General Area		<0.5		<0.5	F					<100	<500	<20	<200	100 cm <sup>2</sup>
2	- Area Over Reactor Vessel		<0.5		<0.5	F					<100	<500	<20	<200	100 cm <sup>2</sup>
3															
4	Basement - General Area		<1		<1	F					<100	<500	<20	<200	100 cm <sup>2</sup>
5	- Sump	2	5		7	C					150	750	<20	<200	100 cm <sup>2</sup>
6															
7	Reactor Vessel Head Area		<1		<1	F					<100	<500	<20	<200	100 cm <sup>2</sup>
8															
9	Top of Fuel Pool		<0.5		<0.5	F					<100	<500	<20	<200	100 cm <sup>2</sup>
10															
11	Personnel Air Lock		<0.5		<0.5	F					<100	<500	<20	<200	100 cm <sup>2</sup>
12															
13	Equipment Air Lock		<0.5		<0.5	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				285			1339			897					
Area Posted: (circle applicable) RA HRA CA RMA AIRBORNE						PROBE	$\alpha$ AC - 3A (U)		10%	X	PROBE	$\beta \gamma$ PANCAKE		20%	X
COMMENTS						EFF.	$\alpha$ 43 - 4 (U)		10%		EFF.				
						(4 P					(4 P				
						GEO.)					GEO.)				

## ATTACHMENT 2: Air Sample Data for Vallecitos Reactor Annual Inspection 2015

Reactor	Location	Sample Volume (ml)	Initial				1 Hour Decay				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	2210.45	1.02E-09	5887.16	2.73E-09	978.99	4.50E-10	352.75	1.62E-10	0.27	1.24E-13	179.69	8.33E-11
	Basement	2.83E+06	2039.96	9.38E-10	5281.56	2.45E-09	639.56	2.94E-10	1373.31	6.32E-10	0.70	3.22E-13	21.14	9.80E-12
	Fuel Pool	2.83E+06	2067.26	9.51E-10	5297.21	2.46E-09	1096.67	5.04E-10	2440.18	1.12E-09	0.90	4.14E-13	9.42	4.37E-12
EVESR	First Floor	2.83E+06	5163.65	2.38E-09	14342.86	6.65E-09	3180.74	1.46E-09	7079.93	3.26E-09	0.60	2.76E-13	1.15	5.33E-13
	Basement	2.83E+06	6219.82	2.86E-09	16754.30	7.77E-09	2553.03	1.17E-09	5429.47	2.50E-09	0.40	1.84E-13	14.87	6.89E-12
	519' Level	2.83E+06	6213.91	2.86E-09	16797.99	7.79E-09	3347.47	1.54E-09	7481.06	3.44E-09	0.80	3.68E-13	4.33	2.01E-12
GETR	First Floor	2.83E+06	971.07	4.47E-10	2391.69	1.11E-09	452.53	2.08E-10	965.12	4.44E-10	0.20	9.20E-14	5.40	2.50E-12
	Basement	2.83E+06	937.69	4.31E-10	2319.45	1.08E-09	464.01	2.13E-10	1041.09	4.79E-10	0.30	1.38E-13	3.19	1.48E-12
	Third Floor	2.83E+06	808.45	3.72E-10	1955.49	9.06E-10	65.78	3.03E-11	131.32	6.04E-11	0.50	2.30E-13	14.26	6.61E-12

### Tennelec System "A" Efficiency & Conversion Factors

Alpha Efficiency	34.58%
Beta Efficiency	34.32%
dpm/uCi	2.22E+06
Alpha cpm/uCi	7.68E+05
Beta cpm/uCi	7.62E+05

\* Note: Lack of P10 gas prevented 24 hour count.

Sampling Information									
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)
VBWR	First Floor	11/14/2015	7:00	7:20	20	5	100.0	28317	2.83E+06
VBWR	Basement	11/14/2015	7:40	8:00	20	5	100.0	28317	2.83E+06
VBWR	Fuel Pool	11/14/2015	7:20	7:40	20	5	100.0	28317	2.83E+06
EVESR	First Floor	11/14/2015	8:35	8:55	20	5	100.0	28317	2.83E+06
EVESR	Basement	11/14/2015	9:25	9:45	20	5	100.0	28317	2.83E+06
EVESR	519' Level	11/14/2015	9:00	9:20	20	5	100.0	28317	2.83E+06
GETR	First Floor	11/14/2015	11:35	11:55	20	5	100.0	28317	2.83E+06
GETR	Basement	11/14/2015	12:00	12:20	20	5	100.0	28317	2.83E+06
GETR	Third Floor	11/14/2015	12:25	12:45	20	5	100.0	28317	2.83E+06



**HITACHI**

GE Hitachi Nuclear Energy

*Vallecitos Nuclear Center  
Sunol, California*

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

**ANNUAL REPORT NO. 48  
FOR THE YEAR 2015**

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

**MARCH 2016**

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

**ANNUAL REPORT NO. 48**

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, 2015 to December 31, 2015 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.



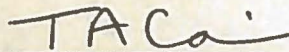
## **5.0 ORGANIZATION**

The organizational structure remained unchanged during 2015. The Site Manager remains T. A. Caine. The VBWR Facility Manager remains M. R. Schrag. The Manager, Regulatory Compliance and EHS remains T. M. Leik.

## **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



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T. A. Caine  
Manager Vallecitos Nuclear Center



**HITACHI**

VALLECITOS NUCLEAR CENTER

**NUCLEAR SAFETY SURVEY RECORD**

SURVEYOR (print and sign)

Name and signature on original at GEH Vallecitos

REVIEWER

NO.

D-055

LOCATION

EVESR Containment

DATE:

11/14/15

TIME:

0900

☒ Routine  
☐ Special

REASON

Annual Survey

ITEMS OR LOCATION		DOSE RATE					DIRECT READING				SMEAR READINGS				
Item No.		$\beta$ mRad/h	$\gamma$ mR/h	n mRem/h	TOTAL mRem/h	Distance	$\beta \gamma$ CPM	$\beta \gamma$ dPM	$\alpha$ CPM	$\alpha$ dPM	$\beta \gamma$ CPM	$\beta \gamma$ dPM	$\alpha$ CPM	$\alpha$ dPM	AREA
1	Top of Spent Fuel Pool (Main Floor)		<0.5		<0.5	F					<100	<500	<20	<200	100 cm <sup>2</sup>
2															
3	487' Level (Basement)		<1		<1	F					200	1000	<20	<200	100 cm <sup>2</sup>
4	503' Level		<0.5		<0.5	F					<100	<500	<20	<200	100 cm <sup>2</sup>
5	519' Level		<0.5		<0.5	C					100	500	<20	<200	100 cm <sup>2</sup>
6	534' Level - General Area		<1-1.5		<1-1.5	C					500	2500	<20	<200	100 cm <sup>2</sup>
7	- Floor Drain		7		7	F									
8	- Emergency Cooling Valves		1-4		1-4	C									
9	549' Level		<0.5		<0.5	F					100	500	<20	<200	100 cm <sup>2</sup>
10															
11	Equipment Air Lock		<0.5		<0.5	F					<100	<500	<20	<200	100 cm <sup>2</sup>
12	Personnel Air Lock		<0.5		<0.5	F					100	500	<20	<200	100 cm <sup>2</sup>
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					285			1339			897				
Area Posted: (circle applicable) RA HRA CA RMA AIRBORNE						PROBE	$\alpha$ AC - 3A (U)		10%	X	PROBE	$\beta \gamma$ PANCAKE		20%	X
COMMENTS						EFF.	$\alpha$ 43 - 4 (U)		10%		EFF.				
						(4 P					(4 P				
						GEO.)					GEO.)				

## ATTACHMENT 2: Air Sample Data for Vallecitos Reactor Annual Inspection 2015

Reactor	Location	Sample Volume (ml)	Initial				1 Hour Decay				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	2210.45	1.02E-09	5887.16	2.73E-09	978.99	4.50E-10	352.75	1.62E-10	0.27	1.24E-13	179.69	8.33E-11
	Basement	2.83E+06	2039.96	9.38E-10	5281.56	2.45E-09	639.56	2.94E-10	1373.31	6.32E-10	0.70	3.22E-13	21.14	9.80E-12
	Fuel Pool	2.83E+06	2067.26	9.51E-10	5297.21	2.46E-09	1096.67	5.04E-10	2440.18	1.12E-09	0.90	4.14E-13	9.42	4.37E-12
EVESR	First Floor	2.83E+06	5163.65	2.38E-09	14342.86	6.65E-09	3180.74	1.46E-09	7079.93	3.26E-09	0.60	2.76E-13	1.15	5.33E-13
	Basement	2.83E+06	6219.82	2.86E-09	16754.30	7.77E-09	2553.03	1.17E-09	5429.47	2.50E-09	0.40	1.84E-13	14.87	6.89E-12
	519' Level	2.83E+06	6213.91	2.86E-09	16797.99	7.79E-09	3347.47	1.54E-09	7481.06	3.44E-09	0.80	3.68E-13	4.33	2.01E-12
GETR	First Floor	2.83E+06	971.07	4.47E-10	2391.69	1.11E-09	452.53	2.08E-10	965.12	4.44E-10	0.20	9.20E-14	5.40	2.50E-12
	Basement	2.83E+06	937.69	4.31E-10	2319.45	1.08E-09	464.01	2.13E-10	1041.09	4.79E-10	0.30	1.38E-13	3.19	1.48E-12
	Third Floor	2.83E+06	808.45	3.72E-10	1955.49	9.06E-10	65.78	3.03E-11	131.32	6.04E-11	0.50	2.30E-13	14.26	6.61E-12

### Tennelec System "A" Efficiency & Conversion Factors

Alpha Efficiency	34.58%
Beta Efficiency	34.32%
dpm/uCi	2.22E+06
Alpha cpm/uCi	7.68E+05
Beta cpm/uCi	7.62E+05

\* Note: Lack of P10 gas prevented 24 hour count.

Sampling Information									
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)
VBWR	First Floor	11/14/2015	7:00	7:20	20	5	100.0	28317	2.83E+06
VBWR	Basement	11/14/2015	7:40	8:00	20	5	100.0	28317	2.83E+06
VBWR	Fuel Pool	11/14/2015	7:20	7:40	20	5	100.0	28317	2.83E+06
EVESR	First Floor	11/14/2015	8:35	8:55	20	5	100.0	28317	2.83E+06
EVESR	Basement	11/14/2015	9:25	9:45	20	5	100.0	28317	2.83E+06
EVESR	519' Level	11/14/2015	9:00	9:20	20	5	100.0	28317	2.83E+06
GETR	First Floor	11/14/2015	11:35	11:55	20	5	100.0	28317	2.83E+06
GETR	Basement	11/14/2015	12:00	12:20	20	5	100.0	28317	2.83E+06
GETR	Third Floor	11/14/2015	12:25	12:45	20	5	100.0	28317	2.83E+06



**HITACHI**

GE Hitachi Nuclear Energy

*Vallecitos Nuclear Center  
Sunol, California*

**GENERAL ELECTRIC TEST REACTOR  
(DEACTIVATED)**

**ANNUAL REPORT NO. 57  
FOR THE YEAR 2015**

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

**MARCH 2016**

**General Electric Test Reactor  
(Deactivated)**

**ANNUAL REPORT NO. 57**

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, 2015 to December 31, 2015 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. Environmental data is maintained on site and available for review. There were no releases from the stack.

**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 2015.

**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 2015. 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 not yet fully operational, and the stack air flow has not been calibrated. Thus no concentration data is available for 2015.

### 3.2 Air Monitors (Yearly average of all meteorological stations.)

Four environmental air-monitoring stations are positioned approximately 90 degrees apart around the operating facilities of the site. Each station is equipped with a membrane filter that is changed weekly and analyzed for gross alpha and gross beta-gamma.

Alpha Concentration:

Weekly Maximum,	$7.93 \times 10^{-15} \mu\text{Ci/cc}$
Weekly Average,	$1.36 \times 10^{-15} \mu\text{Ci/cc}$

Beta Concentration:

Weekly Maximum,	$6.58 \times 10^{-14} \mu\text{Ci/cc}$
Weekly Average,	$1.49 \times 10^{-14} \mu\text{Ci/cc}$

### 3.3 Gamma Radiation

The yearly dose results for the year 2015 as determined from evaluation of site perimeter environmental monitoring dosimeters showed no departure from normal stable backgrounds.

### 3.4 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.

### 3.5 Off-Site

Samples taken off the site indicate normal background for the area.



#### 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 2015. The Site Manager remains T. A. Caine. The VBWR Facility Manager remains M. R. Schrag. The Manager, Regulatory Compliance and EHS remains T. M. Leik.

#### 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



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T. A. Caine  
Manager Vallecitos Nuclear Center



**HITACHI**  
VALLECITOS NUCLEAR CENTER  
NUCLEAR SAFETY SURVEY RECORD

SURVEYOR (print and sign) Name and signature on original at GEH Vallecitos	REVIEWER	NO. C-017
LOCATION 200 Area GETR Containment (page 1 of 2)		DATE: 11/14/15
		TIME: 1300

☒ Routine  
☐ Special

REASON

Annual Survey

ITEMS OR LOCATION		DOSE RATE				DIRECT READING				SMEAR READINGS					
Item No.		$\beta$ mRad/h	$\gamma$ mR/h	$n$ mRem/h	TOTAL mRem/h	Distance	$\beta \gamma$ CPM	$\beta \gamma$ dPM	$\alpha$ CPM	$\alpha$ dPM	$\beta \gamma$ CPM	$\beta \gamma$ dPM	$\alpha$ CPM	$\alpha$ dPM	AREA
1	Personnel Air Lock		<0.5		<0.5	F					<100	<500	<20	<200	100 cm <sup>2</sup>
2	Equipment Air Lock		<0.5		<0.5	F					<100	<500	<20	<200	100 cm <sup>2</sup>
3	Personnel Air Lock SOP										<100	<500	<20	<200	100 cm <sup>2</sup>
4	1st Floor - Clean Area *		<1		<1	F					<100	<500	<20	<200	100 cm <sup>2</sup>
5	- Zone Area *		<1-8		<1-8	F					300	1500	<20	<200	100 cm <sup>2</sup>
6	2nd Floor - General Dose Rate		<1-2		<1-2	F									
7	- EEHS Cubicle Door		7		7	C									
8	- Field Reading Around EEHS Cubicle		1.5-5		1.5-5	F									
9	- Floor Smear / Clean Area *										<100	<500	<20	<200	100 cm <sup>2</sup>
10	- Filter Bank		<1		<1	C									
11	3rd Floor - Zone Area North / Floor *		<1-4		<1-4	F					2200	11000	<20	<200	100 cm <sup>2</sup>
12	- Zone Area South		<1		<1	F					<100	<500	<20	<200	100 cm <sup>2</sup>
13	- Bridge / Canal		1.5		1.5	F					200	1000	<20	<200	100 cm <sup>2</sup>
14	- Missile Shield Point A *		<1		<1	F					<100	<500	<20	<200	100 cm <sup>2</sup>
15	- Platform		<0.5		<0.5	F					<100	<500	<20	<200	100 cm <sup>2</sup>
16	- Clean Area *		<0.5		<0.5	F					<100	<500	<20	<200	100 cm <sup>2</sup>
INSTRUMENT USED		PRM - 7	CP - 5	RO - 20	PNR - 4	TBM -	E - 120	RM -	RM -	PAC - 1SA	LUDLUM-12				
SERIAL NUMBER				285			1339			897					
Area Posted: (circle applicable) RA HRA CA RMA AIRBORNE						PROBE	$\alpha$ AC - 3A (U)		10%	X	PROBE	$\beta \gamma$ PANCAKE		20%	X
COMMENTS * Whatman Smears						EFF.	$\alpha$ 43 - 4 (U)		10%		EFF.				
						(4 P					(4 P				
						GEO.)					GEO.)				



**HITACHI**  
 VALLECITOS NUCLEAR CENTER  
 NUCLEAR SAFETY SURVEY RECORD

SURVEYOR (print and sign) Name and signature on original at GEH Vallecitos		REVIEWER	NO. C-017
LOCATION 200 Area GETR Containment (page 2 of 2)		DATE: 11/14/15	TIME: 1300

<input checked="" type="checkbox"/> Routine <input type="checkbox"/> Special		REASON Annual Survey													
ITEMS OR LOCATION		DOSE RATE					DIRECT READING				SMEAR READINGS				
Item No.		$\beta$ mRad/h	$\gamma$ mR/h	$n$ mRem/h	TOTAL mRem/h	Distance	$\beta \gamma$ CPM	$\beta \gamma$ dPM	$\alpha$ CPM	$\alpha$ dPM	$\beta \gamma$ CPM	$\beta \gamma$ dPM	$\alpha$ CPM	$\alpha$ dPM	AREA
1	3rd Floor - Zone Area Floor Drain	40	6		46	C									
2	Elevator		<0.5		<0.5	F					<100	<500	<20	<200	100 cm <sup>2</sup>
3	Basement - Clean Area *		<1-3		<1-3	F					<100	<500	<20	<200	100 cm <sup>2</sup>
4	- Filter Bank		1		1	F									
5	- Zone Area *		<1-5		<1-5	F					100	500	<20	<200	100 cm <sup>2</sup>
6	- Control Rod Storage		1.0-50		1.0-50	C									
7	- Control Rod Repair Hood		<1-3		<1-3	F-C									
8	- Autoclave / Rad Work Area		<1		<1	C									
9	Mezzanine between 2 <sup>nd</sup> & 3 <sup>rd</sup> Floors		<0.5		<0.5	F					<100	<500	<20	<200	100 cm <sup>2</sup>
10															
11	First Floor Zone - hot spot on floor**	180	70		250	C					20000	100000	<20	<200	100 cm <sup>2</sup>
12															
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				285			1339			897					
Area Posted: (circle applicable) RA HRA CA RMA AIRBORNE						PROBE	$\alpha$ AC - 3A (U)		10%	X	PROBE	$\beta \gamma$ PANCAKE		20%	X
COMMENTS * Whatman Smears ** Gamma Spectroscopy indicates this is Cs-137						EFF.	$\alpha$ 43 - 4 (U)		10%		EFF.				
						(4 P GEO.)				(4 P GEO.)					

## ATTACHMENT 2: Air Sample Data for Vallecitos Reactor Annual Inspection 2015

<u>Reactor</u>	<u>Location</u>	<u>Sample Volume (ml)</u>	<u>Initial</u>				<u>1 Hour Decay</u>				<u>48 Hour Decay *</u>			
			<u>Alpha</u>		<u>Beta</u>		<u>Alpha</u>		<u>Beta</u>		<u>Alpha</u>		<u>Beta</u>	
			<u>ncpm</u>	<u>uCi/ml</u>	<u>ncpm</u>	<u>uCi/ml</u>	<u>ncpm</u>	<u>uCi/ml</u>	<u>ncpm</u>	<u>uCi/ml</u>	<u>ncpm</u>	<u>uCi/ml</u>	<u>ncpm</u>	<u>uCi/ml</u>
VBWR	First Floor	2.83E+06	2210.45	1.02E-09	5887.16	2.73E-09	978.99	4.50E-10	352.75	1.62E-10	0.27	1.24E-13	179.69	8.33E-11
	Basement	2.83E+06	2039.96	9.38E-10	5281.56	2.45E-09	639.56	2.94E-10	1373.31	6.32E-10	0.70	3.22E-13	21.14	9.80E-12
	Fuel Pool	2.83E+06	2067.26	9.51E-10	5297.21	2.46E-09	1096.67	5.04E-10	2440.18	1.12E-09	0.90	4.14E-13	9.42	4.37E-12
EVESR	First Floor	2.83E+06	5163.65	2.38E-09	14342.86	6.65E-09	3180.74	1.46E-09	7079.93	3.26E-09	0.60	2.76E-13	1.15	5.33E-13
	Basement	2.83E+06	6219.82	2.86E-09	16754.30	7.77E-09	2553.03	1.17E-09	5429.47	2.50E-09	0.40	1.84E-13	14.87	6.89E-12
	519' Level	2.83E+06	6213.91	2.86E-09	16797.99	7.79E-09	3347.47	1.54E-09	7481.06	3.44E-09	0.80	3.68E-13	4.33	2.01E-12
GETR	First Floor	2.83E+06	971.07	4.47E-10	2391.69	1.11E-09	452.53	2.08E-10	965.12	4.44E-10	0.20	9.20E-14	5.40	2.50E-12
	Basement	2.83E+06	937.69	4.31E-10	2319.45	1.08E-09	464.01	2.13E-10	1041.09	4.79E-10	0.30	1.38E-13	3.19	1.48E-12
	Third Floor	2.83E+06	808.45	3.72E-10	1955.49	9.06E-10	65.78	3.03E-11	131.32	6.04E-11	0.50	2.30E-13	14.26	6.61E-12

### Tennelec System "A" Efficiency & Conversion Factors

\* Note: Lack of P10 gas prevented 24 hour count.

Alpha Efficiency	34.58%
Beta Efficiency	34.32%
dpm/uCi	2.22E+06
Alpha cpm/uCi	7.68E+05
Beta cpm/uCi	7.62E+05

### Sampling Information

<u>Reactor</u>	<u>Location</u>	<u>Date Sampled</u>	<u>Time On</u>	<u>Time Off</u>	<u>Minutes sampled</u>	<u>Flow Rate (cfm)</u>	<u>Total Flow (ft<sup>3</sup>)</u>	<u>ml/ft<sup>3</sup></u>	<u>Total Sample Volume (ml)</u>
VBWR	First Floor	11/14/2015	7:00	7:20	20	5	100.0	28317	2.83E+06
VBWR	Basement	11/14/2015	7:40	8:00	20	5	100.0	28317	2.83E+06
VBWR	Fuel Pool	11/14/2015	7:20	7:40	20	5	100.0	28317	2.83E+06
EVESR	First Floor	11/14/2015	8:35	8:55	20	5	100.0	28317	2.83E+06
EVESR	Basement	11/14/2015	9:25	9:45	20	5	100.0	28317	2.83E+06
EVESR	519' Level	11/14/2015	9:00	9:20	20	5	100.0	28317	2.83E+06
GETR	First Floor	11/14/2015	11:35	11:55	20	5	100.0	28317	2.83E+06
GETR	Basement	11/14/2015	12:00	12:20	20	5	100.0	28317	2.83E+06
GETR	Third Floor	11/14/2015	12:25	12:45	20	5	100.0	28317	2.83E+06