

Enclosure 1
PG&E Letter HBL-15-002

**PACIFIC GAS AND ELECTRIC COMPANY
HUMBOLDT BAY POWER PLANT
DOCKET NO. 50-133, LICENSE NO. DPR-7**

**HUMBOLDT BAY POWER PLANT UNIT 3
ANNUAL RADIOACTIVE
EFFLUENT RELEASE REPORT**

January 1 through December 31, 2014

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INTRODUCTION

This report summarizes gaseous and liquid radioactive effluent releases from Humboldt Bay Power Plant (HBPP) Unit 3 for the four quarters of 2014. The report includes calculated potential radiation doses from these radioactive effluents and a comparison with the numerical guidelines of 10 CFR 50, Appendix I, as well as a summary of shipments of solid radioactive waste. The concentrations of plant effluent releases during the reporting period were well below Offsite Dose Calculation Manual (ODCM) limits.

The information is reported as required by Appendix B, Section 8.3 of the Humboldt Bay Quality Assurance Plan and Section 4.2 of the ODCM, and it is presented in the general format of Regulatory Guide 1.21, Appendix B (except for the topics identified below).

Meteorology

The meteorological data logging system was removed from service in 1967 so the information specified by Regulatory Guide 1.21 is not available. Previous HBPP Annual Radioactive Effluent Release Reports summarized the cumulative joint frequency distribution of wind speed, direction, and atmospheric stability for the period April 1962 through June 1967, when the meteorological data logging system was in service.

Short-lived Nuclides, Iodine and Noble Gasses

The Unit was last operated on July 2, 1976. Due to the long decay time since operation, short-lived radionuclides are neither expected nor reported. This includes Iodines and noble gases other than Kr-85. During 2008, all of the spent nuclear fuel was transferred from the Spent Fuel Pool to the Independent Spent Fuel Storage Installation (ISFSI), so there is now no source term for Kr-85.

Air Particulate Filter Composites – Sr-90

Air particulate sample filters are composited quarterly and analyzed off-site for Sr-90.

Air Particulate Filter Composites – Am-241

Air particulate sample filters are composited quarterly and analyzed off-site for Am-241.

Air Particulate Filter Composites – Gross Alpha

Each weekly sample filter is individually counted for gross alpha activity, rather than analyzing a monthly composite of the filters, as described in Regulatory Guide 1.21.

Gaseous Effluents – Tritium

Tritium releases during plant operation were less than detection levels. Because the plant was permanently shutdown in 1976, current tritium release levels are less than the release levels that occurred during plant operations. Therefore, no tritium samples were collected during this reporting period. Since the fuel has been relocated to the ISFSI and the Spent Fuel Pool water is below the drinking water standard, no significant tritium can be released by the gaseous mode.

Liquid Effluents

The last batch discharge of radioactive liquid effluent occurred on December 11, 2013. Subsequent radioactive liquid effluent batches were transported to US Ecology for offsite disposal under the 10 CFR 20.2002 exemption. These shipments, volumes, and activity totals are included in Table 5 of this report.

Average Energy

Calculations for the average energy of gaseous releases of fission and activation gases are not required for HBPP.

I. SUPPLEMENTAL INFORMATION

A. Regulatory Limits

1. Gaseous Effluents

a. Noble Gas Release Rate Limit

Noble gases are no longer an issue since the spent nuclear fuel has been relocated to the ISFSI.

b. Iodine Release Rate Limit

Due to the long decay time since the Unit was shutdown, the license does not define an iodine release rate limit.

c. Particulate Release Rate Limit

The radioactive particulate release rate limit is based on concentration limits from 10 CFR 20, divided by an annual average dispersion factor for the sector with the least favorable atmospheric dispersion. If the total release for a period is determined to be a "less than" value, the limits are based on analytical results obtained in November, 2005, for which the mixture was determined to be 84% Cs-137, 11% Co-60 and 5% Sr-90.

The applicable annual average dispersion factors for plant stack and for incidental releases are $1.0E-5$ and $6.59E-3$ seconds per cubic meter, respectively. When both plant stack and incidental releases occur, the "percent of applicable limit" in Table 1 is the sum of the values for "percent of applicable limit" for each of the release paths.

2. Liquid Effluents

a. Concentration Limit

Concentration limits for liquid effluent radioactivity released to Humboldt Bay are taken from 10 CFR 20.

B. Maximum Permissible Concentrations

1. Gaseous Effluents

Maximum Permissible Concentrations for gaseous effluents are taken from 10 CFR 20, Appendix B, Table 2, Column 1.

2. Liquid Effluents

Maximum Permissible Concentrations for liquid effluents are taken from 10 CFR 20, Appendix B, Table 2, Column 2.

C. Measurements and Approximations of Total Radioactivity

1. Gaseous Effluents – Elevated Release

The original plant stack (an elevated release point) was removed in 1998 and replaced with a roof-level discharge point that is referred to as the plant stack, but is considered a ground level release point. Ventilation and system vents are routed to this release point or to modular HEPA ventilation units. Therefore, elevated releases did not occur at HBPP during 2014.

2. Gaseous Effluents – Ground-level Release

a. Fission and Activation Gases

Fission and activation gases are no longer an issue since the spent fuel has been relocated to the ISFSI.

b. Iodines

Due to the long decay time since operation (shutdown July 2, 1976), no detectable releases of radioactive iodines can be expected. Therefore, neither the Technical Specifications nor the ODCM require that these radionuclides be monitored.

c. Particulates

A continuous monitor equipped with an alpha spectrometer, with its response calibrated for Am-241, monitors the alpha particulate activity released from the stack. This monitor was installed in December of 2009.

Radioactive particulates released from the plant stack are monitored by continuous sample collection on particulate filters. Filter papers are removed from the stack sampling system weekly, and are analyzed for the concentration of gamma-emitting nuclides using an intrinsic germanium detector. All statistically significant gamma peaks are identified.

Radioactive particulates released from modular HEPA ventilation units are monitored by continuous sample collection on particulate filters. Filter papers are removed from modular ventilation system weekly, and are analyzed for the concentration of gamma-emitting nuclides using an intrinsic germanium detector. All statistically significant gamma peaks are identified.

After decaying at least seven days, the filters are analyzed for gross alpha radioactivity using a scintillation counter.

Filters are composited and analyzed quarterly for Strontium-90 (the only radioactive Strontium present) and Americium-241 by alpha spectroscopy.

The estimated error of the reported particulate release values is based on uncertainty in sample flow rate, stack flow rate, modular HEPA unit flow rate, detector calibration, and typical sample counting statistics.

The Minimum Detectable Activity (MDA) for all particulate filter samples was less than the applicable Lower Limit of Detection (LLD) presented in the ODCM.

Individual sample release results are assigned to calendar quarters as of the termination of the sample period. Composite sample release results are assigned to the applicable calendar quarter. The release activity is sample concentration multiplied by sample duration and nominal release flow rate (30,500 cfm for the stack or 2,000 cfm for modular HEPA units).

3. Liquid Effluents

a. Batch Releases

There were no batch liquid effluent releases during this report period.

b. Continuous Releases

There were no continuous liquid effluent releases during this report period.

D. Batch Release Statistics

1. Liquid

- a. Number of batch releases 0
- b. Total time period for batch releases N/A
- c. Maximum time period for a batch release N/A
- d. Average time period for a batch release N/A
- e. Minimum time period for a batch release N/A

2. Gaseous

- a. Number of batch releases 0
- b. Total time period for batch releases N/A
- c. Maximum time period for a batch release N/A
- d. Average time period for a batch release N/A
- e. Minimum time period for a batch release N/A

E. Abnormal Release Statistics

1. Liquid

- a. Number of abnormal releases 0
- b. Total activity released N/A

2. Gaseous

- a. Number of abnormal releases 0
- b. Total activity released N/A

II. GASEOUS AND LIQUID EFFLUENTS

A. Gaseous Effluents

Table 1 summarizes the total quantities of radioactive gaseous effluents released. Section A of Table 1 has been omitted as Fission & Activation Gases are neither expected or measured. Table 2A is for reporting the quantities of each of these nuclides determined to be released from an elevated release point (there are none). Table 2B presents the quantities of each of the nuclides determined to be released by the stack or other routes (i.e., ground level release points). Section 1 of Tables 2A and 2B is omitted as Krypton-85 is neither expected nor measured.

There were no "Batch Mode" gaseous releases.

B. Liquid Effluents

Table 3 summarizes the total quantities of radioactive liquid effluents. Table 4 presents the quantities of each of the nuclides determined to be released.

There were no batch liquid effluent releases during this report period.

TABLE 1
GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES

Units	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Est. Total Error, %
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B. Particulates

1. Total release	Ci	<3.88E-06	<4.50E-06	<4.12E-06	<3.94E-06	3.60E+1
2. Average release rate	μCi/sec	<4.99E-07	<5.73E-07	<5.18E-07	<4.96E-07	
3. Percent of applicable limit	%	<4.46E-06	<3.60E-05	<1.59E-05	<1.30E-05	
4. Applicable limit	μCi/cc	1.24E-10	1.24E-10	1.24E-10	1.24E-10	
5. Gross alpha radioactivity	Ci	<2.71E-07	<2.59E-07	<2.66E-07	<2.69E-07	

Table Notes:

The < symbol used in this table means that a majority of the measurements contributing to the result were less than the Minimum Detectable Activity (MDA) for the analyses. Data for individual nuclides combines detected and non-detected results as if all values were detected. The < symbol is applied if less than 50% of the combined value is made up of detected results. When combining detected and non-detected results for different nuclides (e.g. activity totals of multiple nuclides), values with the < symbol are ignored (i.e. treated as zero). When combining non-detected results for different nuclides (e.g. activity totals of multiple nuclides, when none were detected), all values with the < symbol are used.

If the total release for a period is determined to be a "less than" value, the limits are based on analytical results obtained in November, 2005, the mixture was determined to be 84% Cs-137, 11% Co-60 and 5% Sr-90.

The "percent of applicable limit" in Table 1 is the sum of the values for "percent of applicable limit" for each of the release paths identified below:

	Units	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Stack Release Path	%	<4.02E-06	<4.57E-06	<4.16E-06	<3.99E-06
Incidental Release Path	%	<4.42E-07	<3.14E-05	<1.17E-05	<8.99E-06

TABLE 2A

**GASEOUS EFFLUENTS – ELEVATED RELEASE – PARTICULATES
 CONTINUOUS MODE - NUCLIDES RELEASED**

Nuclides Released	Unit	Continuous Mode			
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter

Particulates

Cobalt-60	Ci	N/A	N/A	N/A	N/A
Strontium-90	Ci	N/A	N/A	N/A	N/A
Cesium-137	Ci	N/A	N/A	N/A	N/A
Am-241	Ci	N/A	N/A	N/A	N/A
Total for period	Ci	N/A	N/A	N/A	N/A

Table Notes:

N/A – There were no elevated gaseous effluents during the report period.

TABLE 2B
GASEOUS EFFLUENTS – GROUND-LEVEL RELEASES
NUCLIDES RELEASED

Nuclides Released	Unit	Continuous Mode			
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter

2. Particulates

Cobalt-60	Ci	<1.88E-06	<1.87E-06	<1.91E-06	<1.93E-06
Strontium-90	Ci	<1.96E-07	<8.18E-07	<3.93E-07	<1.96E-07
Cesium-137	Ci	<1.79E-06	<1.77E-06	<1.80E-06	<1.81E-06
Americium-241	Ci	<1.78E-08	<3.93E-08	<1.73E-08	<6.31E-09
Total for period	Ci	<3.88E-06	<4.50E-06	<4.12E-06	<3.94E-06

Table Notes:

The < symbol used in this table means that a majority of the measurements contributing to the result were less than the Minimum Detectable Activity (MDA) for the analyses. Data for individual nuclides combines detected and non-detected results as if all values were detected, but the < symbol is applied if less than 50% of the combined value is made up of detected results. When combining detected and non-detected results for different nuclides (e.g. activity totals of multiple nuclides), values with the < symbol are ignored (i.e. treated as zero). When combining non-detected results for different nuclides (e.g. activity totals of multiple nuclides, when none were detected), all values with the < symbol are used.

TABLE 3
LIQUID EFFLUENTS – SUMMATION OF ALL RELEASES

Units	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Est. Total Error, %
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A. Fission & Activation Products

1. Total release (not including tritium, gases, alpha)	Ci	N/A	N/A	N/A	N/A	N/A
2. Average diluted concentration	μCi/ml	N/A	N/A	N/A	N/A	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	
4. Applicable limit	μCi/ml	N/A	N/A	N/A	N/A	

B. Tritium

1. Total release	Ci	N/A	N/A	N/A	N/A	N/A
2. Average diluted concentration	μCi/ml	N/A	N/A	N/A	N/A	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	
4. Applicable limit	μCi/ml	N/A	N/A	N/A	N/A	

C. Gross Alpha Radioactivity

1. Total release	Ci	N/A	N/A	N/A	N/A	N/A
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D. Volume of waste released (prior to dilution)	Liters	N/A	N/A	N/A	N/A	N/A
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E. Volume of dilution water	Liters	N/A	N/A	N/A	N/A	N/A
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Table Notes:

There were no batch liquid effluent releases during this report period.

TABLE 4
LIQUID EFFLUENTS – NUCLIDES RELEASED

Nuclides Released	Unit	Batch Mode			
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Strontium-90	Ci	N/A	N/A	N/A	N/A
Cesium-137	Ci	N/A	N/A	N/A	N/A
Cobalt-60	Ci	N/A	N/A	N/A	N/A
Americium-241	Ci	N/A	N/A	N/A	N/A
Nickel-63	Ci	N/A	N/A	N/A	N/A
Tritium	Ci	N/A	N/A	N/A	N/A
Total for period	Ci	N/A	N/A	N/A	N/A

Table Notes:

There were no batch liquid effluent releases during this report period.

III. SOLID RADIOACTIVE WASTE

Table 5 summarizes the disposal of solid radioactive waste during the report period.

Note: Processed Waste shipments sent for vendor processing are not considered disposed waste until after waste is processed and shipped for disposal. At the time of this report, some Processed Waste shipments had not yet been processed and sent to disposal. Therefore, final data for Table 5 part 1.d "Other (Processed Waste)" and Table 5 part 3 "Solid Waste Disposition" will be resubmitted with next year's 2015 Radioactive Effluent Release Report in the Errata section.

TABLE 5
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. Solid Waste Shipped Offsite For Burial Or Disposal

1. Type of Waste	Unit	12 Month Period	Estimated Total Error, %
a. Spent resins, filter sludges, evaporator bottoms, etc.	Cubic Meter	2.29E+00	1.00E1
	Ci	7.39E+01	5.60E1
b. Dry compressible waste, contaminated equipment, etc.	Cubic Meter	3.87E+03	1.00E1
	Ci	1.31E+00	5.60E1
c. Irradiated components, control rods, etc.	There were no Irradiated components, control rods, etc. shipments during this reporting period.		
d. Other (Processed Waste)	Cubic Meter	4.70E+01	1.00E1
	Ci	1.59E+00	5.60E1

TABLE 5 – Continued

2. Estimate of major nuclide composition (by type of waste)	Unit	Nuclide	12 Month Period
a. Spent resins, filter sludges, evaporator bottoms, etc.	%	H-3	8.51E-02
	%	C-14	1.08E-01
	%	Fe-55	1.11E-01
	%	Co-60	1.34E+01
	%	Ni-59	8.06E-01
	%	Ni-63	8.45E+01
	%	Sr-90	1.55E-01
	%	Nb-94	2.42E-03
	%	Tc-99	1.36E-03
	%	Cs-137	8.12E-01
	%	U-235	2.87E-07
	%	U-238	6.78E-09
	%	Pu-238	1.77E-03
	%	Pu-239	1.00E-03
	%	Pu-240	9.03E-04
	%	Pu-241	1.67E-02
	%	Pu-242	2.24E-05
	%	Am-241	8.64E-03
%	Cm-242	1.32E-05	
%	Cm-243	1.87E-04	
%	Cm-244	7.69E-05	

TABLE 5 – Continued

b. Dry compressible waste, contaminated equipment, etc.	%	H-3	8.23E-01
	%	C-14	1.20E-01
	%	Fe-55	1.89E+00
	%	Co-60	1.90E+01
	%	Ni-59	7.02E-02
	%	Ni-63	4.86E+01
	%	Sr-90	2.23E+00
	%	Nb-94	2.69E-02
	%	Tc-99	2.99E-02
	%	I-129	3.33E-02
	%	Cs-137	1.34E+01
	%	Eu-154	1.11E-02
	%	U-233	1.38E-02
	%	U-234	1.38E-02
	%	U-238	2.54E-02
	%	Pu-238	4.62E-01
	%	Pu-239	2.69E-01
	%	Pu-240	2.69E-01
	%	Pu-241	1.11E+01
	%	Pu-242	5.45E-03
%	Am-241	1.54E+00	
%	Cm-242	1.68E-06	
%	Cm-243	7.62E-02	
%	Cm-244	7.61E-02	
c. Irradiated components, control rods, etc.	There were no Irradiated components, control rods, etc. shipments during this reporting period.		

TABLE 5 – Continued

d. Other (processed waste),	%	H-3	5.17E-01
	%	C-14	8.33E-03
	%	Fe-55	2.60E-01
	%	Co-60	1.53E+00
	%	Ni-59	5.07E-03
	%	Ni-63	3.23E+01
	%	Sr-90	5.90E+00
	%	Tc-99	2.48E-02
	%	I-129	4.20E-03
	%	Cs-137	5.78E+01
	%	U-233	2.41E-04
	%	U-234	2.41E-04
	%	U-238	1.72E-03
	%	Pu-238	8.98E-02
	%	Pu-239	7.37E-02
	%	Pu-240	7.34E-02
	%	Pu-241	1.03E+00
	%	Pu-242	3.06E-03
	%	Am-241	2.40E-01
	%	Cm-243	2.40E-02
%	Cm-244	2.40E-02	

TABLE 5 - Continued

3. Solid Waste Disposition	Number of Shipments	Mode of Transportation	Destination
	61	Truck - Hittman, TOPS Inc, Interstate Ventures	Energy Solutions, LLC
	386 (See Table Notes)	Truck – NCF/Savage	US Ecology
	2	Truck - Hittman	WCS

B. Irradiated Fuel Shipments

1. Irradiated Fuel Disposition	Number of Shipments	Mode of Transportation	Destination
	None	N/A	N/A

Table Notes:

There were no “Irradiated components, control rods, etc.” shipments during this reporting period.

HBPP no longer performs batch liquid effluent discharges. The filtered ion exchange system (FIXS) will continue to be used reduce liquid batch radioactivity to achieve the necessary concentration limits for liquids being transported to US Ecology for offsite disposal under the 10 CFR 20.2002 exemption. Shipments, volumes and activity totals for those liquid shipments are included in sections A.1.b, A.2.b and 3 of the table.

386 shipments (including 9 liquid shipments) were made to US Ecology under a 10 CFR 20.2002 exemption. These shipments included 2.74E-03 Curies of Cs-137 and 1.98E-04 Curies of Co-60 (to which the liquid shipments contributed 2.26E-05 Curies of Cs-137 and 1.28E-04 Curies of Co-60).

IV. RADIOLOGICAL IMPACT ON MAN

A comparison of calculated doses from various paths has shown that the offsite doses are primarily due to direct radiation. Maximum doses to individuals (for the maximally exposed organs and age groups) are summarized in Table 6. Doses from noble gases are not reported, as noble gas releases were neither expected nor measured. There are no airborne or liquid dose pathways from the adjacent ISFSI, and the direct radiation measurement locations for HBPP include the contribution from the ISFSI. Therefore, these doses comply with 40 CFR 190 as there are no other uranium fuel cycle facilities within 8 km of the HBPP and ISFSI.

- A. Doses to the average individual in the population, based on the guidance of Regulatory Guide 1.109, from all receiving-water-related pathways were not calculated for 2014, because there were no batch liquid effluent releases during this report period. The last batch liquid effluent discharge occurred on December 11, 2013.

With no batch liquid effluent discharge, doses continue to be well below the 10 CFR 50, Appendix I numerical guidelines for limiting effluents as low as reasonably achievable (ALARA) (3 mrem/yr to the total body and 10 mrem/yr to any organ).

- B. Total body doses to the average individual in the population from gaseous effluents to a distance of 50 miles from the site are not calculated, but this dose is less than the total body dose to an average individual present at the maximally exposed location. For an average individual at the maximally exposed location, the total body dose (determined with the same dispersion and deposition parameters as used to calculate maximum exposure) was not explicitly calculated as there were no significant detected releases. Performing the calculation with the observed "less than" values for releases produced a result less than 0.02 mrem/yr.

This maximum calculated dose is well below the 10 CFR 50, Appendix I numerical ALARA guidelines (10 mrem/yr for gamma radiation and 20 mrad/yr for beta radiation from noble gases and 15 mrem/yr to any organ from tritium and radionuclides in particulate form).

- C. Total body doses (to the average individual in unrestricted areas from direct radiation from the facility) are based on TLD results of stations at the site boundary, using the shoreline occupancy factors given in Regulatory Guide 1.109 for the highest average potential individual (Teen age group). For this group, direct radiation would result in an exposure of 0.018 mrem/yr.

This maximum potential dose is well below the 10 CFR 20.1302(b)(2)(ii) limit of 50 mrem/yr from external sources necessary to demonstrate compliance with the 10 CFR 20.1301 dose limit for individual members of the public.

TABLE 6
RADIATION DOSE FOR MAXIMALLY EXPOSED INDIVIDUALS

Dose Source	Dose, milli-rem				
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Annual Total
Liquid Effluents					
Water-related Pathways (1)	-	-	-	-	-
	-	-	-	-	-
Airborne Effluents					
Particulates (2)	-	-	-	-	-
	-	-	-	-	-
Direct Radiation (3)	<0.01	<0.01	<0.01	<0.01	0.02

Notes

1. Maximum total body and organ doses to individuals in unrestricted areas from receiving-water-related exposure pathways were not calculated as there were no batch liquid effluent releases during this report period. The last batch liquid effluent discharge occurred on December 11, 2013.
2. Maximum total body and organ doses to individuals in unrestricted areas from airborne-particulate-related exposure pathways would be calculated from the average concentrations of airborne particulate releases detected during the report period, following the applicable portions of Regulatory Guide 1.109 and NUREG-4013. However, a majority of stack releases and incidental releases for all four quarters of 2014 were "not detected", resulting in a total activity considered "not detected", for which no dose is calculated.
3. Total body doses (to the maximum individual in the population) are based on TLD results of stations at the site boundary, using the shoreline occupancy factors of Regulatory Guide 1.109 for the maximum potential individual (Teen age group).

V. CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL (ODCM)

As decommissioning proceeds at HBPP, system changes or removal may require changes to the ODCM. During 2014 there was one ODCM revision: Revision 25.

The ODCM changes reflect the cessation of liquid effluent discharges via the HBPP Discharge canal to Humboldt Bay as of 12/31/13. Subsequently, processed liquid effluents will be sent for land disposal at an approved disposal facility (generally USEI). The changes to the ODCM reflect the elimination of various systems and controls on the liquid effluent pathway and associated sampling, effluent concentration evaluations, dose assessments and Radiological Environmental Monitoring Program requirements that were specifically targeted at controlling and/or monitoring the impact of radioactive liquid effluents on the environment around HBPP. The methodologies for assessing the impact of liquid releases to the environment are maintained as a means to assess the potential impact of an accidental spill or release. However, in the absence of a routine release pathway, the ongoing assessment methodology and surveillance requirements provide no benefit and satisfy no regulatory requirements.

The calibration frequency of the Stack Particulate Airborne Monitoring System (SPAMS) gaseous effluent monitor was changed from quarterly to semi-annual based on the historical stability of the equipment.

The specific changes are as follows:

ODCM Revision 25 (Effective 4/1/2014)

ODCM Part I

Introduction page ii

Added statement clarifying that HBPP ceased liquid effluent discharges to Humboldt Bay as of December 31, 2013. Calculation methods for liquid effluent discharges are preserved in Part II.

TOC

Updated to reflect current changes to the ODCM.

Section 1

Deleted 1.7 - FIXS and 1.9 – GWTS. The FIXS effluent is monitored for disposal at a landfill but is no longer part of a liquid effluent pathway. The GWTS is a state licensed system not part of the HBPP NRC license basis

Specification 2.2.1

Table 2-4

Added specific reference RCP-19 and RCP-19A currently used for quarterly tests.

Change the testing period from quarterly to semi-annual.

Specification 2.3

Liquid Effluent Concentration Surveillance requirements changed to meet the requirements for the receiving disposal facility. Since the liquid effluent pathway for liquids is to a disposal facility the surveillance requirements are consistent with the requirements for manifesting the liquid for disposal. Surveillance requirements and the associated Table 2.5 guidance were connected to the concentration and dose assessment for discharge to Humboldt Bay and are no longer applicable.

Specification 2.4

Liquid Effluent Dose – Deleted. Since there is no longer a liquid effluent pathway to the environs of HBPP this specification is no longer applicable.

Specification 2.5

Filtered Ion Exchange – Deleted. Though the FIXS continues to be used at the current time for processing remaining radioactive liquids, the use of the system is not associated with minimizing dose to the environs at HBPP. Continued use of the FIXS system will be to achieve the necessary concentration limits in liquids being transported for offsite disposal.

Specification 2.8

Added an alternate method for assessing dose at the site boundary based on weekly sample results. The alternate method provides for a reasonably quick determination of the potential dose at the site boundary based on routine sample results rather than waiting for a quarterly sample result.

Specification 2.10

Deleted references to liquid effluent dose. Eliminated the cross-references to the specifications associated with liquid effluents as it is no longer applicable to the total dose calculation.

Specification 2.11

REMP Monitoring Program

Limiting Condition 2.11.1.b - Edited to eliminate references to liquid sampling in in the REMP. Table 2-7, waterborne sample points – Deleted, Table 2-8 – Deleted and Table 2-9 – Detection capabilities for water, fish, milk, food products and sediment deleted from table. The waterborne sampling points in Table 2-7 are associated with the discharge and intake canals. The reporting criteria are associated with liquid effluent concentrations in excess of Table 2-8 concentrations. Since there is no longer a liquid effluent pathway to the HBPP environs, no REMP sampling will be conducted that is associated with

waterborne contaminants. Sampling associated with the State of California requirements are not part of the licensing basis. The portions of the tables and surveillance requirements that are preserved are associated with the airborne particulate sampling.

Figure 2-1

Updated an earlier revision of Figure 2-1. Figure 2-1 was inserted to reflect the TLD locations that represent REMP monitoring locations for direct radiation exposure for HBPP3 decommissioning (8 compass points) and the ISFSI perimeter fence.

Basis 3.2 & Basis 3.3

Liquid Effluent Concentration and Dose Bases - Deleted - Liquid effluents are no longer discharged to Humboldt Bay. Updated the reason that the specifications that were associated with liquid effluent discharges are no longer contained in the specifications.

Basis 3.4

Liquid Effluent Treatment Basis - Deleted - Liquid effluents are no longer discharged to Humboldt Bay. The treatment of liquids is for disposal and no longer part of the dose associated with 10 CFR 50.36a and 10 CFR 50, Appendix I criteria.

Basis 3.8

Added explanation of the basis of the addition to Surveillance 2.8.2. Explains the assumptions used to approximate the dose impact based on weekly sample results.

Basis 3.11

Deleted the portion of the basis that discussed concurrent sampling for State of California requirements and sampling of water, vegetation, fish and sediment as a part of the REMP. Sampling of vegetation, fish and sediment was eliminated in a previous revision of the ODCM. This revision eliminates water sampling in the discharge canal. Final assessment of the suitability of the HBPP plant site is managed as a part of the License Termination Plan independent of the ODCM.

Section 4.1.h and Table 4-1, 4.2 and 4.3

Deleted 4.1.h of the Annual REMP Report that discusses water sampling. Deleted reference to deleted specifications in the Report content. Water samples will no longer be collected in support of the REMP. Sections of the table associated with waterborne samples are marked N/A or Not Required.

ODCM Part II

Section 1.1.2

Deleted the section of Liquid Effluent Unrestricted Area Concentration associated with canal dilution factors. No longer using the canal as a discharge pathway. Also, the discharge canal will be undergoing remediation in 2015. Therefore, the limitation on effluent is 10 times the ECL with no dilution afforded by plant controlled water basins.

Section 2.0

Deleted 2.1 (31-day), 2.2 (calendar quarter) and 2.3 (calendar year) dose projections. Added note to 2.4. Since there is no planned liquid effluent pathway, no dose projections are warranted. The calculation methodology in Section 2.4 is preserved to provide plant specific parameters in the event that an inadvertent liquid release warrants assessment with plant specific parameters.

Section 3.0

3.1 Treatment Requirements and 3.2 Treatment Capabilities –Deleted. There is no longer a liquid effluent treatment system.

Section 5.1.d, 5.2.c & 5.3.c

Liquid releases were removed from the calculation of Uranium Fuel Cycle Cumulative Dose. Liquid releases are no longer an exposure pathway for whole body, skin or organ dose.

Appendix A

Added a note to indicate that there are no longer liquid releases. Added Table A-3 to reflect the state of decommissioning with regard to gaseous effluents relative to the baseline condition. Reflects the current state of decommissioning with regard to the baseline liquid and gaseous effluent conditions assumed.

VI. CHANGES TO THE PROCESS CONTROL PROGRAM (PCP)

There were no changes to the Process Control Program during the report period.

VII. CHANGES TO RADIOACTIVE WASTE TREATMENT SYSTEMS

Effective December 23, 2013, HBPP no longer uses outfall canal dilution for liquid effluents. Continued use of the FILTERED ION EXCHANGE SYSTEM (FIXS) will be to achieve the necessary concentration limits for liquids being transported to US Ecology for offsite disposal under the 10 CFR 20.2002 exemption.

VIII. INOPERABLE EFFLUENT MONITORING INSTRUMENTATION

Liquid Effluent Monitoring

Effective December 23, 2013 HBPP no longer uses outfall canal dilution for liquid effluents. There were no batch liquid effluent releases during this report period.

Airborne Effluent Monitoring Instrumentation

Stack Particulate Airborne Monitoring System (SPAMS)

There were no unplanned SPAMS out of service periods during the report period.

Modular HEPA air sample units are used to monitor air effluents that are not monitored by SPAMS. The air sampling unit in the Hot Machine Shop was found tripped off on three separate occurrences 5/6/2015, 5/20/2015, and 9/6/2015 during the weekly sample collection period. Per RP supervision there had not been any work performed in that building during the weeks the unit was tripped offline. See SAPN 1388434, 1388476 and 1388867.

IX. ERRATA

2012 Annual Radioactive Effluent Release Report Errata:

It was discovered that the ODCM Revision 22 changes, included with the Annual Radioactive Effluent Release Report for 2012, were not properly annotated with revision bars and dates as required by HBPP procedure. Revision 22 of the ODCM with revision bars and dates is included with this submittal. (See Enclosure 3)

2013 Annual Radioactive Effluent Release Report Errata:

At the time of submitting the 2013 report, a waste processor had not completed processing the waste to be sent for disposal. The following update to Table 5 now includes the corrected processed waste volume and isotopic percentages for the year.

**TABLE 5
 SOLID WASTE AND IRRADIATED FUEL SHIPMENTS**

A. Solid Waste Shipped Offsite For Burial Or Disposal

1. Type of Waste	Unit	12 Month Period	Estimated Total Error, %
d. Other (Processed Waste)	Cubic Meter	4.50E+01	1.00E+01
	Ci	6.10E-01	5.60E+01

TABLE 5 - Continued

2. Estimate of major nuclide composition (by type of waste)	Unit	Nuclide	12 Month Period
d. Other (processed waste),	%	H-3	7.22E-01
	%	C-14	4.07E-02
	%	Fe-55	8.10E-01
	%	Co-60	3.95E+00
	%	Ni-59	3.34E-03
	%	Ni-63	2.91E+01
	%	Sr-90	5.24E+00
	%	Tc-99	7.04E-02
	%	I-129	3.23E-02
	%	Cs-137	5.65E+01
	%	U-233	6.10E-03
	%	U-234	6.10E-03
	%	U-238	1.12E-02
	%	Pu-238	1.60E-01
	%	Pu-239	2.35E-01
	%	Pu-240	1.31E-01
	%	Pu-241	1.65E+00
	%	Pu-242	2.32E-03
	%	Am-241	1.24E+00
%	Cm-243	8.01E-02	
%	Cm-244	8.12E-02	