Pacific Gas and Electric Company
Humboldt Bay Power Plant
Paul J. Roller
Director and Plant Manager, HBPP

1000 King Salmon Avenue
Eureka, CA 95503
707/444-0700

March 31, 2011

PG&E Letter HBL-11-002

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Docket No. 50-133, OL-DPR-7
Humboldt Bay Power Plant Unit 3
Annual Radioactive Effluent Release Report for 2010

Dear Commissioners and Staff:

Enclosure 1 contains the Humboldt Bay Power Plant Unit 3 "Annual Radioactive Effluent Release Report," covering the period January 1 through December 31, 2010. This report is required by Appendix B, Section 8.3 of the Humboldt Bay Quality Assurance Plan.

Enclosure 2 contains Revision 17 to the "SAFSTOR Offsite Dose Calculation Manual" as required by Specification Section 4.2 of the "SAFSTOR Offsite Dose Calculation Manual."

There are no regulatory commitments made in this letter.

Sincerely,

Paul J. Roller

cc: Elmo E. Collins, Jr.
John B. Hickman
HBPP Humboldt Distribution

Enclosures

FSME20
A009
FSME

Enclosure 1
PG&E Letter HBL-11-002

HUMBOLDT BAY POWER PLANT UNIT 3
ANNUAL RADIOACTIVE
EFFLUENT RELEASE REPORT

January 1 through December 31, 2010

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

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY 1, 2010 THROUGH DECEMBER 31, 2010

TABLE OF CONTENTS

HUMBOLDT BAY POWER PLANT

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 2010

INTRODUCTION

This report summarizes gaseous and liquid radioactive effluent releases from Humboldt Bay Power Plant (HBPP) Unit 3 for the four quarters of 2010. 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.

During 2008 all of the spent nuclear fuel was transferred from the Spent Fuel Pool to the Independent Spent Fuel Storage Installation (ISFSI). Therefore, there was no source term for noble gases for the entire year.

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, Appendix B, Section F, is not available. Previous Humboldt Bay Power Plant 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

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. Kr-85 is no longer an issue since the spent fuel has been relocated to the ISFSI.

Air Particulate Filter Composites – Sr-90

Air particulate sample filters are combined for approximately monthly intervals and analyzed off-site for Sr-90.

Air Particulate Filter Composites – Am-241

Air particulate sample filters are combined for approximately monthly intervals 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 – Sr-90

Batch releases are analyzed individually offsite for Sr-90, rather than analyzed as a quarterly composite as described in Regulatory Guide 1.21.

Liquid Effluents – Ni-63

Batch releases are analyzed individually offsite for Ni-63, rather than analyzed as a quarterly composite as described in Regulatory Guide 1.21.

Average Energy

For HBPP, calculations for the average energy of gaseous releases of fission and activation gases are not required to be performed or reported.

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. The applicable annual average dispersion factors for elevated releases and for ground-level releases

are 1.0E-5 and 6.59E-3 seconds per cubic meter, respectively.

When both elevated and ground-level 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 considered a ground level release point. All ventilation and system vents are routed to this release point referred to as the current plant stack. Therefore, elevated releases did not occur at HBPP during 2010.

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 (intrinsic germanium detector). All statistically significant gamma peaks are identified.

After decaying at least 7 days, the filters are analyzed for gross alpha radioactivity (scintillation counter).

Filters are composited monthly and analyzed monthly for Strontium-90 (the only radioactive Strontium present) and Americium-241 by alpha spectroscopy. The monthly composite results are averaged together to produce the quarterly composite result.

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

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

Samples are assigned to calendar quarters as of the termination of the sample period. The amount of activity reported for a calendar quarter is the activity for the combined sample time, multiplied by the ratio of the length of the calendar quarter to the sample period.

3. Liquid Effluents

a. Batch Releases

Water from contaminated plant systems was collected, filtered, treated with Cesium-specific ion-exchange media, and analyzed before discharge (on a batch basis) through the liquid radwaste process monitor. Analysis of weekly composite samples from the plant effluent canal did not detect any additional release of radioactive liquids during the report period.

Samples of liquid waste batches were analyzed for the concentration of gamma-emitting nuclides (intrinsic germanium detector). All statistically important peaks were identified. Additionally, all batches were analyzed for radioactive strontium (Sr-90), gross alpha, Ni-63 and tritium.

The estimated error of the reported release values is estimated based on uncertainty in sample volume, batch volume, detector calibration, and typical sample counting statistics.

The MDA for all batch samples was less than the applicable LLD presented in the ODCM.

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 14

b. Total time period for batch releases ..... 2.28E3 minutes

c. Maximum time period for a batch release ..... 1.93E2 minutes

d. Average time period for a batch release ..... 1.63E2 minutes

e. Minimum time period for a batch release ..... 1.53E2 minutes

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. Table 2A presents the quantities of each of the 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 (ground level release points).

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.

The quantity of radionuclides released in 2010 is similar to that released in 2009.

HUMBOLDT BAY POWER PLANT

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 2010

TABLE 1

GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES

	Units	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Est. Total Error, %
B. Particulates						
1. Total release	Ci	<3.42E-06	<3.66E-06	<3.68E-06	<3.95E-06	3.60E1
2. Average release rate	µCi/sec	<4.40E-07	<4.66E-07	<4.63E-07	<4.97E-07	
3. Percent of applicable limit	%	<4.88E-06	<5.17E-06	<5.14E-06	<5.22E-06	
4. Applicable limit	µCi/cc	9.01E-11	9.01E-11	9.01E-11	9.01E-11	
5. Gross alpha radioactivity	Ci	3.93E-08	6.14E-08	5.48E-08	1.68E-08	

Note: 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.

HUMBOLDT BAY POWER PLANT

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 2010

TABLE 2A

GASEOUS EFFLUENTS – ELEVATED RELEASE – 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

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

HUMBOLDT BAY POWER PLANT

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 2010

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	<8.46E-07	<8.17E-07	<8.41E-07	<1.20E-06
Strontium-90	Ci	<2.73E-07	<3.46E-07	<3.22E-07	<3.74E-07
Cesium-137	Ci	<6.22E-07	<8.29E-07	<8.02E-07	<1.10E-06
Americium-241	Ci	<1.68E-06	<1.67E-06	<1.72E-06	<1.28E-06
Total for period	Ci	<3.42E-06	<3.66E-06	<3.68E-06	<3.95E-06

Note: 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.

HUMBOLDT BAY POWER PLANT

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 2010

TABLE 3

LIQUID EFFLUENTS – SUMMATION OF ALL RELEASES

	Units	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Est. Total Error, %
A. Fission & Activation Products						
1. Total release (not including tritium, gases, alpha)	Ci	2.61E-03	6.82E-04	1.66E-03	4.38E-04	1.00E1
2. Average diluted concentration	µCi/ml	1.10E-10	2.71E-11	6.43E-11	3.55E-10	
3. Percent of applicable limit	%	1.34E-02	3.50E-03	8.83E-03	5.30E-02	
4. Applicable limit	µCi/ml	8.23E-07	7.75E-07	7.28E-07	6.69E-07	
B. Tritium						
1. Total release	Ci	5.32E-04	4.27E-05	9.59E-04	3.46E-04	1.50E1
2. Average diluted concentration	µCi/ml	2.24E-11	1.70E-12	3.72E-11	2.80E-10	
3. Percent of applicable limit	%	2.24E-06	1.70E-07	3.72E-06	2.80E-05	
4. Applicable limit	µCi/ml	1.00E-03	1.00E-03	1.00E-03	1.00E-03	
C. Gross Alpha Radioactivity						
1. Total release	Ci	7.88E-06	1.51E-07	1.81E-06	7.45E-07	1.00E1
D. Volume of waste released (prior to dilution)	Liters	9.91E+04	7.32E+04	9.96E+04	7.61+04	3.00E0
E. Volume of dilution water	Liters	2.37E+10	2.51E+10	2.57E+10	1.24E+09	1.50E1

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).

HUMBOLDT BAY POWER PLANT

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 2010

TABLE 4

LIQUID EFFLUENTS – NUCLIDES RELEASED

Nuclides Released	Unit	Batch Mode			
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Strontium-90	Ci	1.45E-3	4.10E-4	1.06E-3	2.95E-4
Cesium-137	Ci	2.03E-4	5.19E-5	1.07E-4	5.76E-5
Cobalt-60	Ci	1.91E-4	1.57E-5	1.31E-4	2.18E-5
Americium-241	Ci	<1.87E-5	<9.28E-6	<1.61E-5	<7.45E-6
Nickel-63	Ci	7.70E-4	2.04E-4	3.58E-4	6.40E-5
Tritium	Ci	5.32E-4	4.27E-5	9.59E-4	3.46E-4
Alpha Emitters	Ci	7.88E-6	1.51E-7	1.81E-6	7.45E-7
Total for period	Ci	3.15E-3	7.24E-04	2.62E-3	7.85E-4

Nuclides Released	Unit	Continuous 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
Total for period	Ci	N/A	N/A	N/A	N/A

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).

N/A – There were no continuous releases during the report period.

III. SOLID RADIOACTIVE WASTE

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

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	0	NA
	Ci	0	NA
b. Dry compressible waste, contaminated equipment, etc.	Cubic Meter	1312	1.00E1
	Ci	1.12	5.60E1
c. Irradiated components, control rods, etc.	Cubic Meter	0	NA
	Ci	0	NA
d. Other (Processed Waste)	Cubic Meter	0	NA
	Ci	0	NA

2. Estimate of major nuclide composition (by type of waste)	Unit	Nuclide	12 Month Period
a. Spent resins, filter sludges,	%	NA	NA
evaporator bottoms, etc.			
b. Dry compressible waste,	%	H-3	5.73E0
contaminated equipment, etc.	%	C-14	1.13E-01
	%	Fe-55	8.40E0
	%	Co-60	2.23E1
	%	Ni-59	1.56E0
	%	Ni-63	1.49E1
	%	Sr-90	5.99E-01
	%	Zr-95	8.96E-02
	%	Tc-99	2.18E1
	%	I-129	1.45E-01
	%	Cs-137	2.69E1
	%	Eu-154	1.33E-01
	%	U-233	5.37-02
	%	U-234	6.68E-02
	%	U-238	5.50E-02
	%	Pu-238	3.30E-01
	%	Pu-239	5.34E-01
	%	Pu-240	5.32E-01
	%	Pu-241	1.41E1
	%	Am-241	1.191E0
	%	Cm-243	4.52E-02
	%	Cm-244	4.50E-02
c. Irradiated components,	%	NA	NA
control rods, etc.			

HUMBOLDT BAY POWER PLANT

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 2010

TABLE 5 - Continued

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

3. Solid Waste Disposition	Number of Shipments	Mode of Transportation	Destination
	88	Truck	Energy Solutions, LLC

B. Irradiated Fuel Shipments

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

Note: 10 shipments were made to US Ecology under a 10 CFR 20.2002 exemption. These shipments included 1.95E-05 curies of Cs-137.

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 and to the consumption of aquatic foods. Maximum doses to individuals (for the maximally exposed organs and age groups) are summarized in Table 6. These doses comply with 40 CFR 190 as there are no other uranium fuel cycle facilities within 8 km of the Humboldt Bay Power Plant.

A. Doses to the average individual in the population from all receiving-water-related pathways were calculated for detected releases, based on the guidance of Regulatory Guide 1.109. The highest results were less than 0.01 mrem/yr (total body) for the Adult age group, and 0.010 mrem/yr for the bone of the Adult age group.

   These doses are well below the 10 CFR 50, Appendix I numerical guidelines for limiting effluents as low as is 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 (calculated with the same dispersion and deposition parameters as were used to calculate maximum exposure) was less than 0.001 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 <0.01mrem/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.

HUMBOLDT BAY POWER PLANT

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 2010

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)	<0.01 (5) 0.02 (6)	<0.01 (5) <0.01 (6)	<0.01 (5) 0.01 (6)	<0.01 (5) <0.01 (6)	<0.01 (5) 0.04 (6)
Airborne Effluents					
Particulates (2)	0.00 (7) 0.00 (7)	0.00 (7) 0.00 (7)	0.00 (7) 0.00 (7)	0.00 (7) 0.00 (7)	0.00 (8) 0.00 (9)
Direct Radiation (4)	<0.01	<0.01	<0.01	<0.01	<0.01

Notes

1. Maximum total body and organ doses to individuals in unrestricted areas from receiving-water-related exposure pathways were calculated from the average concentrations of liquid releases detected during the report period, following the applicable portions of Regulatory Guide 1.109 and NUREG-4013.
2. Maximum total body and organ doses to individuals in unrestricted areas from airborne-particulate-related exposure pathways were 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.
3. Total body and skin doses to potentially exposed individuals located at the point of maximum offsite ground-level concentrations of radioactive gaseous effluents calculated because there were detected releases of radioactive noble gases.
4. 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).
5. Total body (Adult age group).
6. Bone (Adult and Child age group).
7. For stack releases for all four quarters of 2010, a majority of the results were "not detected", resulting in a total activity considered "not detected", for which no dose is calculated.
8. Total body (Teen age group).
9. Bone (Teen age group).

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

The ODCM was revised once during the report period. The changes maintained the level of radioactive effluent control and dose commitment required by regulation, and did not adversely affect the accuracy or reliability of effluent, dose or setpoint calculations.

Revision 17 to the ODCM became effective on 12/8/10. The changes in this revision included:

The Manual was revised to account for the changes in liquid effluent control and monitoring program as a result of the elimination of circulating water pumps/circulators no longer being used to dilute the liquid effluents for determining concentrations at the site boundary and liquid effluent pathway dose calculation.

Specific changes are:

Table 2-1 – For ACTION 21 b. remove release rate and add in instantaneous concentration, because release rate is no longer applicable to only tidal flow dilution.

PARTII Section 1.1 – Added in equation 1-1 to clarify basis of the radiation monitor alarm set point is dependent on this relationship holding for the release.

PART II Section 1.1.1 – Added in description of the change to tidal dilution flow that now provides dilution of the liquid effluent. Provided equation 1-2 that describes the new relationship of concentration with tidal dilution, and provided details on the assumptions used to determine tidal dilution factor.

PART II Section 1.1.2 Describe the new relationship of the radiation monitor alarm set point with tidal dilution and the elimination of circulating water flow.

PART II Section 1.1.3 Added in the numerical relationship for composite Effluent Control Limit (ECL_c) that can be used for basis when considering only the gamma component of the monitor response.

PART II Section 1.1.6 Eliminated mention of circulating water flow and clarified only for tidal dilution.

PART II Seaction 1.1.7 Added paragraph to explain limitation of new method when applied to continuous discharge rather than batch release applications.

PART II Section 1.6.8 Clarified ECL calculation basis, and removed reference to circulating water flow.

Part II Section 1.6.9 Removed reference to circulating flow, and added clarification to footnotes.

PART II Table 1-1 Removed previous reference to Cs-137 concentration since these values no longer apply to current concentration mixture, and are not used as the basis of conservative alarm set point calculations which are based on background assumptions and monitor response to actual gamma emitting effluent concentration values.

PART II Section 2.4 Added in description of the new method of calculating doses using a Bay dilution factor of 80 based on numerical analysis models of the Bay dilution over a 24 hour average period.

PART II Equation 2-1 Added in new Diluted Concentration value of the Bay and described its use. Included a statement for performing dose calculations during the transition using the new method if desired rather than using both methods.

PART II Tables 2-1, 2-2, 2-3, and 2-4 Added in data for Ni-63 and Am-241 since these radionuclides are specifically analyzed for with each batch and should be used in dose calculations for completeness.

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

There were no changes to the Radioactive Waste Treatment Systems during the report period.

VIII. INOPERABLE EFFLUENT MONITORING INSTRUMENTATION

The Radioactive Liquid Effluent Monitoring System was declared inoperable on 11/29/2010 and remained inoperable for the remainder of the year. Duplicate sampling and analysis were performed, as required by the ODCM, for planned radioactive liquid discharges after this date

The cause of the inoperability was determined to be communication errors between the computers in the system. HBPP is working to replace the detector and electronics of the system.