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GENERAL MANAGER
CALVERT CLIFFS

April 24, 1992

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Supplemental Semi-Annual Effluent Release Report

Gentlemen:

Enclosed please find the Supplemental Semi-Annual Effluent Release Report in accordance with Calvert Cliffs Units 1 and 2 Technical Specification 6.9.1.8. This update includes the strontium analytical results for the fourth quarter of 1991. This update also includes changes to Attachments (2A), (3A), and Appendix B. Attachment (2A) was modified to include a continuous discharge containing only tritium that was not included in our original report. A typographic error was also corrected for the third quarter dilution water value. The change to Attachment (3A) was made to correct the original report because a self identified calculation error was discovered on several resin solid waste shipments. Appendix B was modified to remove the ODCM change 91-211 that was never approved in 1991. Please replace the original pages with the enclosed pages.

Should you have any further questions regarding this matter, we will be pleased to discuss them with you.

Very truly yours,

RED/JAS/CDS/bjd

Enclosure

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D. ODCM and Process Control Plan (PCP) Changes

One change was made to the ODCM during the second half of 1991. The change was reviewed by POSRC and approved by the Plant General Manager, Calvert Cliffs Nuclear Power Plant, prior to implementation. The scope and basis for this change is discussed in Appendix B. In keeping with the requirement of the Technical Specification 6.17, a copy of the change to the CCNPP ODCM is enclosed in Attachment 1. Vertical lines in the right margin of the text denote the above referenced change with accompanying change number.

No changes were made in the PCP in the second half of 1991.

E. Radioactive Gaseous Effluent Monitoring Instrumentation

The Unit 2 Main Vent Header Noble Gas effluent monitor (2-RI-5415) was out of service for greater than 30 days during the second half of 1991. This notice is required by Technical Specification 3.3.3.9. This monitor was declared inoperable on August 9, 1991 because of frequent RMS pump failures. The source of the failures was a blocked discharge line fitting but the source of the problem was not immediately identified despite extensive troubleshooting efforts. The RMS effluent monitor was restored to service on September 12, 1991.

IV. AVERAGE ENERGY

Not Applicable.

V. MEASUREMENTS AND APPROXIMATIONS AND TOTAL RADIOACTIVITY

A. Fission and Activation Gases

1. Batch Releases

Prior to each batch release of gas from a pressurized gas decay tank, a sample is collected and analyzed by gamma spectroscopy using a Ge detector for the principal gamma emitting noble gas radionuclides. The total activity released is based on the pressure/volume relationship (gas laws) of the tank.

Prior to and after each containment purge, a gas sample is collected and analyzed by gamma spectroscopy using a Ge detector for the principal gamma emitting noble gas radionuclides. The total activity released is based on containment volume and purge rate. Activity buildup while purging is also considered.

2. Continuous Releases

A gas sample is collected at least weekly from the main vents and analyzed by gamma spectroscopy using a Ge detector for the principal gamma emitting noble gas radionuclides. The total activity released for the week is based on the total sample activity decay corrected to the midpoint of the sample period multiplied by the main vent flow for the week.

TABLE 1C - REG GUIDE 1.21 (Cont.)

CALVERT CLIFFS NUCLEAR POWER PLANT
EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT
SECOND HALF - 1991

GASEOUS EFFLUENTS - GROUND LEVEL RELEASES

3. PARTICULATES		UNITS	CONTINUOUS MODE		BATCH MODE	
			3RD QUARTER	4TH QUARTER	3RD QUARTER	4TH QUARTER
Manganese	-54	Ci	(2)	(2)	(1)	(1)
Iron	-59	Ci	(2)	(2)	(1)	(1)
Cobalt	-58	Ci	(2)	(2)	(1)	(1)
Cobalt	-60	Ci	(2)	(2)	(1)	(1)
Zinc	-65	Ci	(2)	(2)	(1)	(1)
Strontium	-89	Ci	(2)	(2)	(1)	(1)
Strontium	-90	Ci	(2)	(2)	(1)	(1)
Molybdenum	-99	Ci	(2)	(2)	(1)	(1)
Cesium	-134	Ci	(2)	(2)	(1)	(1)
Cesium	-137	Ci	(2)	(2)	(1)	(1)
Cerium	-141	Ci	(2)	(2)	(1)	(1)
Cerium	-144	Ci	(2)	(2)	(1)	(1)
Total For Period		Ci	-	-	(1)	(1)

NOTES TO TABLE 1C

- (1) Iodines and particulates in batch releases are accounted for with the main vent continuous samplers when the release is made through the plant main vent.
- (2) Less than minimum detectable activity which meets the LLD requirements of Technical Specification Surveillance Requirement 4.11.2.1.2.

TABLE 2A - REG GUIDE 1.21

CALVERT CLIFFS NUCLEAR POWER PLANT
EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT
SECOND HALF - 1991

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

A. FISSION AND ACTIVATION PRODUCTS	UNITS	3RD QUARTER	4TH QUARTER	EST. TOTAL ERROR, %
1. Total Release (not including tritium, gases, alpha)	Ci	5.87E-01	1.62E-01	±3.30E+00
2. Average diluted concentration during period	uCi/ml	1.18E-08	7.71E-10	
3. Percent of Tech. Spec. limit(1)	%	8.45E-02	1.75E-04	
4. Percent of Tech. Spec. limit(2)	%	4.25E-02	8.75E-02	
5. Percent of Tech. Spec. limit(3)	%	5.59E-01	2.50E-02	
6. Percent of Tech. Spec. limit(4)	%	2.79E-01	1.25E-02	
B. TRITIUM				
1. Total Release	Ci	4.33E+02	4.52E+02	±9.80E+00
2. Average diluted concentration during period	uCi/ml	8.66E-06	2.15E-06	
3. Percent of applicable limit(5)	%	2.89E-01	7.17E-02	
C. DISSOLVED AND ENTRAINED GASES				
1. Total Release	Ci	2.95E-02	1.76E-01	±4.60E+00
2. Average diluted concentration during period	uCi/ml	5.95E-10	8.38E-10	

TABLE 2A - REG GUIDE 1.21 (Cont.)

CALVERT CLIFFS NUCLEAR POWER PLANT
EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT
SECOND HALF - 1991

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

D. GROSS ALPHA RADIOACTIVITY	UNITS	3RD QUARTER	4TH QUARTER	EST. TOTAL ERROR, %
1. Total Release	Ci	2.23E-05	8.35E-05	±5.36E+01
E. VOLUME OF WASTE RELEASES (prior to dilution)	liters	9.73E+06	3.15E+07	±1.50E+00
F. VOLUME OF DILUTION WATER USED DURING PERIOD	liters	5.00E+10	2.10E+11	±1.64E+01

NOTES TO TABLE 2A

- (1) Percent of I.C.3 Quarterly Organ Dose Limit (10 mrem)
- (2) Percent of I.C.3 Yearly Organ Dose Limit (20 mrem)
- (3) Percent of I.C.3 Quarterly Whole Body Dose Limit (3 mrem)
- (4) Percent of I.C.3 Yearly Whole Body Dose Limit (6 mrem)
- (5) Limit used is 3×10^{-3} uCi/ml
- (6) Less than minimum detectable activity which meets the LLD requirements of Technical Specification Surveillance Requirement 4.11.1.1.1.

TABLE 2B - REG GUIDE 1.21

CALVERT CLIFFS NUCLEAR POWER PLANT
EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT
SECOND HALF - 1991

LIQUID EFFLUENTS

NUCLIDES RELEASED		UNITS	CONTINUOUS MODE		PATCH MODE	
			3RD QUARTER	4TH QUARTER	3RD QUARTER	4TH QUARTER
Sodium	-24	Ci	(1)	(1)	8.74E-05	(1)
Chromium	-51	Ci	(1)	(1)	(1)	1.24E-04
Manganese	-54	Ci	(1)	(1)	1.02E-03	1.92E-04
Cobalt	-57	Ci	(1)	(1)	(1)	(1)
Cobalt	-58	Ci	(1)	(1)	1.50E-02	7.35E-02
Iron	-59	Ci	(1)	(1)	(1)	(1)
Cobalt	-60	Ci	(1)	(1)	8.47E-03	4.82E-03
Zinc	-65	Ci	(1)	(1)	(1)	(1)
Strontium	-89	Ci	(1)	(1)	3.28E-03	1.16E-03
Strontium	-90	Ci	(1)	(1)	2.93E-04	2.12E-04
Strontium	-92	Ci	(1)	(1)	(1)	(1)
Niobium	-95	Ci	(1)	(1)	2.85E-04	1.78E-03
Niobium	-97	Ci	(1)	(1)	1.41E-04	1.10E-03
Zirconium	-95	Ci	(1)	(1)	(1)	8.95E-04
Molybdenum	-99	Ci	(1)	(1)	(1)	(1)
Technetium	-99m	Ci	(1)	(1)	5.72E-04	3.05E-04
Ruthenium	-106	Ci	(1)	(1)	(1)	(1)
Silver	-110m	Ci	(1)	(1)	5.82E-03	1.92E-03
Tin	-113	Ci	(1)	(1)	(1)	(1)
Antimony	-122	Ci	(1)	(1)	3.71E-05	6.04E-06
Antimony	-125	Ci	(1)	(1)	1.39E-02	1.63E-05
Technetium	-132	Ci	(1)	(1)	(1)	(1)

TABLE 2B - REG GUIDE 1.21 (Cont.)

**CALVERT CLIFFS NUCLEAR POWER PLANT
EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT
SECOND HALF - 1991**

LIQUID EFFLUENTS

NUCLIDES RELEASED		UNITS	CONTINUOUS MODE		BATCH MODE	
			3RD QUARTER	4TH QUARTER	3RD QUARTER	4TH QUARTER
Iodine	-131	Ci	(1)	(1)	1.85E-02	1.71E-02
Iodine	-132	Ci	(1)	(1)	(1)	8.29E-06
Iodine	-133	Ci	(1)	(1)	1.82E-02	1.93E-03
Iodine	-135	Ci	(1)	(1)	1.86E-04	(1)
Cesium	-134	Ci	(1)	(1)	9.42E-02	1.89E-02
Cesium	-136	Ci	(1)	(1)	(1)	1.12E-05
Cesium	-137	Ci	(1)	(1)	4.06E-01	3.82E-02
Barium	-140	Ci	(1)	(1)	1.33E-03	(1)
Lanthanum	-140	Ci	(1)	(1)	1.67E-03	5.25E-04
Cerium	-144	Ci	(1)	(1)	1.87E-04	(1)
Tungsten	-187	Ci	(1)	(1)	2.21E-04	(1)
Total For Period		Ci	(1)	(1)	5.50E-01	1.44E-01

Xenon	-131m	Ci	(1)	(1)	(1)	(1)
Xenon	-133	Ci	(1)	(1)	2.85E-02	1.18E-01
Xenon	-133m	Ci	(1)	(1)	(1)	1.50E-03
Xenon	-135	Ci	(1)	(1)	9.46E-04	7.37E-04
Xenon	-135m	Ci	(1)	(1)	(1)	(1)
Total For Period		Ci	(1)	(1)	2.95E-02	1.76E-01

TABLE 2B - REG GUIDE 1.21 (Cont.)

CALVERT CLIFFS NUCLEAR POWER PLANT
EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT
SECOND HALF - 1991

LIQUID EFFLUENTS

NOTES TO TABLE 2B

- (1) Less than minimum detectable activity which meets the LLD requirements of Technical Specification Surveillance Requirement 4.11.1.1.1.

TABLE 3A

CALVERT CLIFFS NUCLEAR POWER PLANT
EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT
SECOND HALF - 1991

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (NOT IRRADIATED FUEL)

1. Type of Waste	UNITS	6-MONTH PERIOD	EST. TOTAL ERROR %
a. Dewatered spent resin	m ³	6.81E+00	±2.00E+01
	Ci	5.00E+01	
b. Dry Compressible Waste(Burial) Contaminated Equipment, etc. (Prior to Compaction)	m ³	7.01E+01	±5.00E+01
	Ci	1.32E+01	
	m ³	5.40E+02	
c. Irradiated Components, Control Rods, etc.	m ³	6.20E-01	±5.00E+01
	Ci	4.32E+03	
d. Other (CVCS Filters)	m ³	-	±2.00E+01
	Ci	-	

2. Estimate of Major Nuclides (By Type of Waste - Only nuclides >1 % are reported)

a.	Iron	-55	4.55E+00 %	
	Cobalt	-58	1.55E+00 %	
	Cobalt	-60	2.95E+00 %	
	Nickel	-63	1.06E+01 %	
	Antimony	-125	1.10E+00 %	
	Cesium	-134	1.96E+01 %	
	Cesium	-137	5.56E+01 %	
	b.	Carbon	-14	2.05E+00 %
Chromium		-51	9.62E+00 %	
Iron		-55	3.55E+01 %	
Cobalt		-58	1.52E+00 %	
Cobalt		-60	1.01E+01 %	
Nickel		-63	1.31E+01 %	
Ruthenium		-106	2.52E+00 %	
Silver		-110	1.41E+00 %	
Antimony		-125	4.75E+00 %	
Cesium		-134	2.70E+00 %	
Cesium		-137	1.07E+01 %	
c.		Manganese	-54	1.20E+00 %
		Iron	-55	5.66E+01 %
	Cobalt	-60	3.80E+01 %	
	Nickel	-63	4.00E+00 %	

APPENDIX B

SUMMARY OF CHANGES TO THE CCNPP ODCM SECOND HALF 1991

CHANGES TO THE CCNPP ODCM IN SECOND HALF 1991

SUMMARY AND BASIS

The Calvert Cliffs Offsite Dose Calculation Manual (ODCM) is contained in the Chemistry Procedure CP-607. Changes to this document are controlled through the normal procedure change review and approval process. This process meets the requirements of CCNPP Technical Specification 6.17.

One change was made to the ODCM during the second half of the year 1991. The change was reviewed by the Plant Operations and Safety Review Committee (POSRC) and approved by the Plant General Manager, Calvert Cliffs Nuclear Power Plant, prior to implementation. Change bars are provided in the right margin of the ODCM text to identify the changes made.

The change was reviewed and approved on September 16, 1991, and designated as change 91-155. This change was made to describe an environmental sampling location in better detail.