

RETS MASTER FILE

EFF-812

PALISADES NUCLEAR POWER PLANT
RADIOACTIVE EFFLUENT AND
WASTE DISPOSAL SEMI-ANNUAL REPORT

January - June 1981

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This report provides information relating to radioactive effluent releases and solid radioactive waste disposal operations of the Palisades Plant during the period of January through June 1981 in the format contained in Plant Technical Specification Section 6.9.3.1.A.

1 Supplemental Information

a. Batch Releases

Information relating to batch releases of liquid and gaseous effluents is provided in Table 1.

b. Abnormal Releases

No abnormal releases of radioactivity occurred during the period.

2 Gaseous Effluents

Table 2a presents a summary of all gaseous radioactive effluents released during the period. Release totals for each radionuclide determined to be present in gaseous effluents are contained in Table 2b. The unidentified portion of the total release was 0.003% of the total release.

3 Liquid Effluents

Table 3a presents a summary of all liquid radioactive effluents released during the period. Release totals for each radionuclide determined to be present in liquid effluents are contained in Table 3b. The unidentified portion of the total release was 0.002% of the total release.

4 Solid Waste

Quantities of solid waste shipped off-site and the disposition of these shipments are presented in Table 4.

5 Radiological Impact on Man

Potential doses to individuals and populations were calculated using effluent data contained in Tables 2 and 3, and the dose conversion factors contained in the February/March 1979 Appendix I submittal.

- a. Total body and significant organ doses to individuals in unrestricted areas from receiving water-related exposure pathways were calculated to be less than 1 millirem.
- b. The maximum off-site air doses due to beta and gamma radiation at locations near ground level from gaseous effluents were calculated to be less than 1 millirem.
- c. Organ doses to individuals in unrestricted areas from radioactive iodine and radioactive material in particulate form from the major pathways of exposure were calculated to be less than 1 millirem for any organ.
- d. Total body doses to the population and average doses to individuals in the population from receiving water-related pathways to a distance of 50 miles from the site were calculated to be less than 1 manrem and 1 millirem, respectively.
- e. Total body doses to the population and average doses to individuals in the population from gaseous effluents to a distance of 50 miles from the site were calculated to be less than 1 manrem and 1 millirem, respectively.

TABLE 1
PALISADES NUCLEAR POWER PLANT
WASTE RELEASES (1962)

A. GASEOUS

WASTE GAS CHECK TAGS	UNITS	FIRST QUARTER	SECOND QUARTER
Number of Releases		9	6
Total Release Time	Minutes	5.05E+03	1.90E+03
Maximum Release Time	Minutes	3.65E+03	1.12E+03
Average Release Time	Minutes	5.50E+02	3.16E+02
Minimum Release Time	Minutes	3.50E+01	2.50E+01

B. LIQUID

	UNITS	FIRST QUARTER	SECOND QUARTER
Number of Releases		2	5
Total Release Time	Minutes	5.22E+03	5.14E+03
Maximum Release Time	Minutes	4.38E+03	1.37E+03
Average Release Time	Minutes	2.61E+03	1.03E+03
Minimum Release Time	Minutes	8.5E+02	2.00E+02

PALISADES NUCLEAR POWER PLANT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1981)

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	UNITS	FIRST QUARTER	SECOND QUARTER	EST. TOTAL, EROR, %
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A. FISSION & ACTIVATION GASES

1. Total release	CI	1.413E+02	2.03E+01	5.0E+00
2. Average release rate for period	µCi/sec	1.617E+00	2.58E+00	
3. Percent of Technical Specification Limit	%	1.20E-02	2.6E-03	

B. IODINES

1. Total iodine-131	CI	1.19E-02	3.04E-03	5.0E+00
2. Average release rate for period (I-131)	µCi/sec	1.53E-03	3.57E-04	
3. Percent of Technical Specification Limit (I-131)	%	1.09E-01	2.80E-02	

C. PARTICULATES

1. Particulates with half-lives > 8 days	CI	3.43E-04	5.52E-05	1.06E+01
2. Average release rate for period	µCi/sec	4.41E-05	7.02E-06	
3. Percent of Technical Specification Limit	%	1.70E-03	5.00E-04	
4. Gross alpha radioactivity	CI	1.37E-06	7.80E-07	

D. TRITIUM

1. Total release	CI	1.25E+00	1.301E+00	
2. Average release rate for period	µCi/sec	1.61E-01	1.65E-01	
3. Percent of Technical Specification Limit	%	1.6E-04	1.6E-04	

TABLE 26

PALISADES NUCLEAR POWER PLANT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1981)

GASEOUS EFFLUENTS - GROUND-LEVEL RELEASES

NUCLIDES RELEASED	UNITS	FIRST QUARTER	SECOND QUARTER
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1. FISSION CASES

Krypton-85	C1	8.22E-01	1.139E+00
Xenon-133	C1	1.39E+02	1.785E+01
Xenon-135	C1	4.78E-01	4.16E-01
Xenon-131m	C1	4.97E-03	4.09E-01
Xenon-133m	C1	2.19E-02	4.39E-02
Xenon-135m	C1	2.08E-01	2.35E-01
Krypton-85m	C1	7.53E-02	6.16E-02
Krypton-87	C1	1.27E-01	6.63E-02
Krypton-88	C1	2.08E-01	8.69E-02
Total for period	C1	1.41E+02	2.03E+01

2. IODINES

Iodine-131	C1	1.19E-02	3.04E-03
Iodine-133	C1	6.22E-03	2.99E-03
Iodine-135	C1	1.35E-03	1.08E-03
Iodine-132	C1	6.26E-04	1.75E-04
Total for period	C1	2.01E-02	7.28E-03

3. PARTICULATES

Cesium-134	C1	1.63E-05	2.91E-07
Cesium-137	C1	1.37E-04	1.89E-05
Manganese	C1	5.24E-05	7.41E-06
Cobalt-60	C1	3.91E-06	2.57E-06
Cobalt-60	C1	1.30E-04	1.18E-05
Net Unidentified Beta	C1	3.32E-05	1.36E-05

TABLE 3a

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PALISADES NUCLEAR POWER PLANT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1981)

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	UNITS	FIRST QUARTER	SECOND QUARTER	EST. TOTAL ERROR, %
A. FISSION AND ACTIVATION PRODUCTS				
1. Total release (not including tritium, gases, alpha)	Ci	2.28E-03	2.33E-03	8.5E+00
2. Average diluted concentration during period	µCi/ml	9.59E-11	9.40E-11	
3a. Percent of applicable limit Modified Liquid Waste System only	%	8.37E-01	1.12E+00	
3b. Percent of applicable limit Laundry System Drains only Note 1	%	No Laundry Releases	9.5E-02	
B. TRITIUM				
1. Total release	Ci	5.41E+01	7.53E+01	5.0E+00
2. Average diluted concentration during period	µCi/ml	2.21E-06	3.04E-06	
3a. Percent of applicable limit Modified Liquid Waste System only	%	7.4E+00	1.01E+01	
3b. Percent of applicable limit Laundry System Drains only Note 1	%	No Laundry Releases	8.3E-01	
C. DISSOLVED AND ENTRAINED GASES				
1. Total release	Ci	1.23E-03	9.74E-04	9.0E+00
2. Average diluted concentration during period	µCi/ml	5.02E-11	3.93E-11	
3a. Percent of applicable limit Modified Liquid Waste System only	%	2.0E-03	2.0E-03	
3b. Percent of applicable limit Laundry System Drains only Note 1	%	No Laundry Releases	1.48E-03	
D. GROSS ALPHA RADIOACTIVITY				
1. Total release	Ci	-	-	
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)				
	Liters	7.69E+06	6.612E+06	
F. VOLUME OF DILUTION WATER USED DURING PERIOD				
	Liters	2.45E+10	2.48E+10	

Note 1: The effluents from the Laundry System Drains were included in the total release and the average diluted concentration during period. These effluents are given in Table 3c.

PALISADES NUCLEAR POWER PLANT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1981)

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNITS	FIRST QUARTER	SECOND QUARTER
Cesium-134	CI	-	4.64E-05
Cesium-137	CI	-	2.29E-04
Cobalt-58	CI	8.63E-05	2.78E-04
Cobalt-60	CI	6.05E-04	5.14E-04
Magnesium-24	CI	9.72E-04	4.50E-04
Lanthanum-140	CI	-	-
Strontium-89	CI	-	-
Strontium-90	CI	-	-
Net Unidentified Beta	CI	6.18E-04	8.10E-04
Total for Period (Above)	CI	2.28E-03	2.33E-03
Xenon-133	CI	1.23E-03	9.74E-04

TABLE 3c

PALISADES NUCLEAR POWER PLANT

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1981)

Laundry Effluents

<u>Isotopes</u>	<u>Curies</u>
CS-134	4.64E-05
CS-137	1.24E-04
Co-58	2.78E-04
Mn-54	5.25E-05
Co-60	9.12E-05
TOTAL	5.12E-05
Xe-133	9.19E-05
Tritium	5.16E-03
TOTAL	5.84E-03
Dilution, liters	2.48E+10
Diluted Average $\mu\text{Ci/ml}$	2.35E-10
Percent of Technical Specification Limits	9.4E-01
Volume Release	9810 liters
Number of Releases	1
TOTAL RELEASE PERIOD	200 minutes

PALISADES NUCLEAR POWER PLANT

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SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

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

1. Type of Waste	Units	FIRST SIX MONTHS
a. Spent resins, filter sludges, evaporator bottoms, etc.	m ³ G1	3.93E+01 2.306E+00
b. Dry compressible waste, contaminated equipment, etc.	m ³ G1	2.103E+02 5.758E+00
c. Irradiated components, control rods, etc.	m ³ G1	0.0 0.0
d. Other (describe)	m ³ G1	0.0 0.0

2. Solid Waste Disposition

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination License Number</u>
12	Truck	US Ecology Richland WA License WN-I-019-2
1	Truck	Ches Nuclear Barnwell SC License 097

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
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None