

*Southern California Edison Company*

P.O. BOX 800  
2244 WALNUT GROVE AVENUE  
ROSEMEAD, CALIFORNIA 91770

August 15, 1979

U. S. Nuclear Regulatory Commission  
Region V  
Office of Inspection and Enforcement  
Suite 202, Walnut Creek Plaza  
1990 North California Boulevard  
Walnut Creek, California 94596

Attention: Mr. R. H. Engelken, Director

Docket No. 50-206  
San Onofre Unit 1

Dear Sir:

Enclosed is the semi-annual report for the period January 1, 1979 to June 30, 1979, submitted in accordance with Sections 5.6.2.a and 5.6.2.b of Appendix B to Provisional Operating License DPR-13, as amended.

Sincerely,

A handwritten signature in cursive script, appearing to read 'H. L. Ottoson'.

H. L. Ottoson  
Manager, Nuclear Generation

Attachments

cc: Director, Office of Nuclear Reactor Regulation (17)

bcc: H. T. Sipe, California Public Utilities Commission  
Los Angeles Public Utilities Commission  
J. E. Thomas, SDG&E  
D. L. Couchman, NUS Corporation  
Bechtel Power Corporation  
Director, Nuclear Engr. & Operations Department  
Dr. I. Thierer  
K. P. Easkin  
J. G. Haynes  
W. C. Moody  
P. J. West  
D. E. Nunn  
C. R. Kocher/J. A. Beoletto  
R. S. Currie  
D. G. Areghini  
~~R. E. Millard~~ *H. HENDERSON*  
H. L. Ottoson  
F. P. Riley  
~~G. T. McLandrich~~ *B. KATZ*  
~~J. T. Head, Jr.~~ *R. DIETCH*  
A. R. Strachan  
California Regional Water Quality Control Board  
J. M. Curran (15)  
M. K. Sullivan  
EDM Files  
Power Supply Files

*TSK*

*JB*

SAN ONOFRE NUCLEAR GENERATING STATION  
SEMI-ANNUAL OPERATING REPORT NO. 24

FOR THE PERIOD INCLUDING  
JANUARY 1, 1979 to JUNE 30, 1979

SUBMITTED IN ACCORDANCE WITH:  
OPERATING LICENSE NO. DPR-13

SUBMITTED BY:  
SOUTHERN CALIFORNIA EDISON COMPANY  
SAN DIEGO GAS & ELECTRIC COMPANY

## RADIOACTIVE EFFLUENT RELEASES

Attached are tables which summarize radioactive releases from the plant for January through June, 1979. An independent laboratory performs some of the analyses. Consequently the following data will be included in a future report: liquid releases, April, May and June gross alpha, C-14, Sr-89, Sr-90, Fe-55, Ni-63 and S-35; airborne releases, April, May and June gross alpha.

### 1. Liquid Effluents

- a. Total gross radioactivity released, excluding tritium and noble gases, was  $9.68 \text{ E-1}$  curies. The average concentration released to the unrestricted areas was  $3.44 \text{ E-9 } \mu\text{Ci/ml}$ . The maximum concentration released to the unrestricted area was  $1.87 \text{ E-7 } \mu\text{Ci/ml}$ .
- b. The total tritium released to the unrestricted area was  $1.03 \text{ E+3}$  curies resulting in an average concentration of  $3.67 \text{ E-6 } \mu\text{Ci/ml}$ .
- c. The total dissolved noble gas radioactivity released to the unrestricted area was 9.23 curies resulting in an average concentration of  $3.28 \text{ E-8 } \mu\text{Ci/ml}$ .
- d. No alpha radioactivity was detected in the January through March effluent.
- e. The volume of liquid waste released was  $2.79 \text{ E+7}$  liters. The volume of dilution water was  $2.81 \text{ E+11}$  liters.
- f. The specific radionuclide composition of the effluent is shown in Table I.
- h. The percent of the technical specification limit for liquid releases, excepting analyses not yet completed was  $1.28 \text{ E-1}$ .

### 2. Airborne Effluents

- a. Total noble gas radioactivity was  $1.67 \text{ E+2}$  curies. The maximum release rate was  $4.34 \text{ E+3 } \mu\text{Ci/sec}$ . The percent of technical specification limit was  $2.89 \text{ E-2}$ . Specific radionuclide composition of noble gas releases is listed in Table II.
- b. The only detectable radiiodine release occurred in June during sphere purge. The amount was  $1.22 \text{ E-4}$  curies, and the percent of technical specification limit was  $4.97 \text{ E-5}$ .
- c. The only detectable particulate radioactivity release was in June during sphere purge. The amount was  $1.59 \text{ E-5}$  curies and the percent of technical specification limit was  $6.29 \text{ E-7}$ . Composition of the particulate effluent is shown in Table II.

WASTE

1. The total amount of waste shipped was 2.95 E+3 cubic feet.
2. The total estimated radioactivity shipped was 9.24 E+1 curies.
3. The shipments were made on March 15, 20, 23, 27 and 29 to Beatty, Nevada by Southwest Nuclear Company for burial. Also a shipment was made on June 28 to Beatty, Nevada by Nuclear Engineering, Inc. and a shipment was made on June 29 to Richland, Washington by Nuclear Engineering, Inc.

MKS/yc

REPORT OF RADIC VE EFFLUENTS

Facility: San Onofre Nuclear Generating Station

Docket: 50 - 206

Year: 1979

I. LIQUID RELEASES

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	SEMI-ANNUAL TOTAL
1. Gross Radioactivity (β,γ)*													
a) Total Release	1.51E-2	4.06E-2	<LLD	3.62E-2	1.93E-2	8.57E-1							9.68E-1
b) Avg. Concentration Released	3.06E-10	9.15E-10	<LLD	7.70E-103	8.7E-10	4.86E-10							3.44E-9
c) Max. Concentration Released	5.22E-9	1.06E-8	<LLD	8.09E-9	3.13E-9	1.87E-7							1.87E-7
2. Tritium													
a) Total Release	7.23E+1	2.27E+2	3.74E 0	1.67E+2	2.67E+2	2.95E+2							1.03E+3
b) Avg. Concentration Released	1.47E-6	5.11E-6	7.44E-8	3.55E-6	5.35E-6	7.43E-6							3.67E-5
3. Dissolved Noble Gases													
a) Total Release	1.53E-2	8.44E 0	<LLD	<LLD	<LLD	7.70E-1							9.23E+0
b) Avg. Concentration Released	3.11E-10	1.90E-7	<LLD	<LLD	<LLD	1.94E-8							3.28E-8
4. Gross Alpha Radioactivity													
a) Total Release	<LLD	<LLD	<LLD	IA	IA	IA							<LLD
b) Avg. Concentration Released	<LLD	<LLD	<LLD	IA	IA	IA							<LLD
5. Volume of liquid waste to discharge canal													
6. Volume of Dilution Water	4.82E+6	4.72E+6	6.58E+6	1.44E+6	9.61E+6	7.33E+5							2.79E+7
7. Isotopes Released	4.93E+10	4.44E+10	5.03E+10	4.70E+10	4.99E+10	3.97E+10							2.81E+11
C-14			2.0 E-3	IA	IA	IA							2.0E-3
Cr-51						2.24E-1							2.24E-1
Mn-54				1.7 E-3		1.1 E-3							2.8E-3
Fe-59						1.97E-1							1.97E-1
Co-58	6.04E-3	2.16E-2			5.5 E-3	3.19E-1							3.52E-1
Co-60		1.59E-2		1.84E-2	2.8 E-3	5.30E-2							9.01E-2
Zn-65													<LLD
Sr-89				IA	IA	IA							<LLD
Sr-90				IA	IA	IA							<LLD
Ag-110m				IA	IA	IA							<LLD
Sb-124	9.1 F-3			1.61E-2		4.5 E-3							2.97E-2
I-131													LLD
I-133					1.09E-2	7.4 E-3							1.83E-2
Xe-131m													<LLD
Xe-133	1.53E-2	1.17E-1				7.70E-1							<LLD
Xe-133m													9.02E-1
Xe-135		8.32E 0											<LLD
Cs-134						7.3 E-3							8.23E+0
Cs-137		3.1 F-3				1.41E-2							7.3E-3
Ba-140													1.72E-2
S-35			3.9E-3										<LLD
Fe-55	1.11E-2	3.5E-3	4.6E-3	IA	IA	IA							3.9E-3
Ni-63	7.7E-4	3.9E-3		IA	IA	IA							1.91E-2
Nb-95						1.60E-2							4.6E-3
Ru-103						1.36E-2							1.60E-2
8. Percent of Tech. Spec. Limit For Total Activity Released	4.96E-2	1.72E-1	2.63E-3	1.20 E-1	2.46E-1	3.38E-1							**

IA=Independent Analyst

\*Without tritium and noble gases \*\* Tentative







*Southern California Edison Company*

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FILED

P. O. BOX 800  
2244 WALNUT GROVE AVENUE  
ROSEMEAD, CALIFORNIA 91770

February 22, 1980

U. S. Nuclear Regulatory Commission  
Region V  
Office of Inspection and Enforcement  
Walnut Creek Plaza, Suite 202  
1990 North California Boulevard  
Walnut Creek, CA 94596

Attention: Mr. R. H. Engelken, Director

Docket No. 50-206  
San Onofre Unit 1

Dear Sir:

Enclosed is the semi-annual report for the period July 1, 1979 to December 31, 1979 in accordance with Sections 5.6.2.a and 5.6.2.b of Appendix B to Provisional Operating License No. DPR-13, as amended. All of the yearly data is contained and totalled in this report.

Sincerely,



H. L. Ottosen  
Manager, Nuclear Generation

DDD/yc

Attachment

cc: Director, Office of Inspection and Enforcement (17)  
Director, Office of Management Information and Program Control (2)

bcc: H. T. Sipe, California Public Utilities Commission  
Los Angeles Public Utilities Commission  
D. W. Gilman, San Diego Gas and Electric Company  
D. L. Couchman, NUS Corporation  
Bechtel Power Corporation  
Director, Nuclear Engr. & Operations Dept., Electric Power Research Institute  
California Regional Water Quality Control Board  
I. Thierer  
K. P. Baskin  
J. G. Haynes  
W. C. Moody  
P. J. West  
D. E. Nunn  
C. R. Kocher/J. A. Beoletto  
R. Dietch  
R. S. Currie  
H. L. Ottoson  
J. M. Curran  
E. J. Donovan  
B. Katz  
K. B. Henderson  
P. Riley  
M. K. Sullivan  
D. D. Duran  
EDM Center

*RUX*

*URK*

*EJD*  
*OK*



SAN ONOFRE NUCLEAR GENERATING STATION  
SEMI-ANNUAL OPERATING REPORT NO. 25

FOR THE PERIOD INCLUDING  
JULY 1, 1979 TO DECEMBER 31, 1979

SUBMITTED IN ACCORDANCE WITH:  
OPERATING LICENSE NO. DPR-13

SUBMITTED BY:  
SOUTHERN CALIFORNIA EDISON COMPANY  
SAN DIEGO GAS & ELECTRIC COMPANY

## RADIOACTIVE EFFLUENT RELEASES

Attached are tables which summarize radioactive releases from the plant. An independent laboratory performs some of the analyses on monthly composite samples. As a consequence, the November and December data do not contain strontium 89 or 90. These data will be included in a future report as they become available.

### 1. Gaseous Effluents

#### a. Gross Radioactivity Releases

- (1) Total gross radioactivity releases were  $6.32 \text{ E}+2$  curies. In addition  $2.81 \text{ E}+1$  curies of tritium were released.
- (2) The maximum gross radioactivity release rate for a one hour period was  $4.69 \text{ E}+3$   $\mu\text{Ci}/\text{sec}$ .
- (3) Total gross radioactivity data by nuclide released are shown in Table II.
- (4) The percent of the technical specification limit for noble gases is  $3.79 \text{ E}-2$  percent.

#### b. Iodine Releases

- (1) Total Iodine radioactivity released during this reporting period was  $1.22 \text{ E}-4$  curies of Iodine-131.
- (2) This represented  $2.03 \text{ E}-5$  percent of the technical specification limit.

#### c. Particulate Releases

- (1) Particulate radioactivity released during this reporting period was  $2.09 \text{ E}-5$  curies.
- (2) Gross alpha releases excluding background radioactivity were less than LLD.
- (3) Total gross radioactivity of nuclides with half lives greater than eight days was  $2.09 \text{ E}-5$  curies.
- (4) The percent of the technical specification limit for particulate radioactivity with half lives greater than eight days was  $5.30 \text{ E}-7$ .

## 2. Liquid Effluents

- a. Total gross radioactivity released, excluding tritium and noble gases, was  $1.10 \text{ E}+1$  curies. The average concentration released to unrestricted areas was  $1.86 \text{ E}-8 \text{ } \mu\text{Ci/ml}$ .
- b. The maximum concentration of gross radioactivity released to the unrestricted area was  $1.69 \text{ E}-6 \text{ } \mu\text{Ci/ml}$ .
- c. The total tritium released to the unrestricted area was  $2.32 \text{ E}+3$  curies. The average tritium concentration released to the unrestricted area was  $3.93 \text{ E}-6 \text{ Ci/ml}$ . Alpha radioactivity released to the unrestricted area was  $1.24 \text{ E}-4$  curies. The average alpha concentration was  $2.10 \text{ E}-13 \text{ } \mu\text{Ci/ml}$ .
- d. The total dissolved gas radioactivity released to the unrestricted area was  $1.81 \text{ E}+1$  curies. This quantity yielded an average concentration of  $3.07 \text{ E}-8 \text{ } \mu\text{Ci/ml}$  released to the unrestricted area.
- e. The volume of liquid waste released was  $3.41 \text{ E}+7$  liters.
- f. The total volume of dilution water was  $5.90 \text{ E}+11$  liters.
- g. Total gross radioactivity by nuclide is shown in Table I.
- h. The percent of the technical specification limit for liquid releases is  $2.92 \text{ E}-1$ .

## SOLID WASTE

1. Total amount of solid waste shipped was  $2.95 \text{ E}+3$  cubic feet.
2. The total estimated radioactivity involved in the above shipments was  $9.24 \text{ E}+1$  curies.
3. The shipments were made on March 15, 20, 23, 27 and 29 to Beatty, Nevada by Southwest Nuclear co. for burial. Also a shipment was made on June 28 to Beatty, Nevada by Nuclear Engineering, Inc., and a shipment was made on June 29 to Richland, Washington by Nuclear Engineering, Inc.

*Thru June 29*

*Table II, Airborne Releases, of Semi-Annual Operating Report No. 23 should be updated to indicate total tritium released for 1978 is 5.75 E-1 curies.*

ADDITIONS

Table II, Airborne Releases, of Semi-Annual Operating Report No. 23 should be updated to indicate total tritium released for 1978 is 5.75 E-1 curies.

Table I, Liquid Releases of Semi-Annual Operating Report No. 24 should be updated to include the revised data for the January-June period resulting from the additional gross alpha, C-14, Sr-89, Sr-90, Fe-55, Ni-63 and S-35 data.

Table II, Airborne Releases of Semi-Annual Operating Report No. 24 should be updated to include the revised data for the January-June period resulting from the additional gross alpha, Sr-89 and Sr-90 data.

DDD/yc

REPORT OF RADIOACTIVE EFFLUENTS

Facility: San Onofre Nuclear Generating Station

Docket: 50 - 206

Year: 1979

I. LIQUID RELEASES

	1979												SEMI-ANNUAL TOTAL	ANNUAL TOTAL		
	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.				
1. Gross Radioactivity (B,y)*																
a) Total Release	Curries	2.70E-2	4.80E-2	1.05E-2	4.42E-2	4.25E-2	1.07E+0	7.68E-2	1.36E-1	7.60E+0	1.46E+0	4.69E-1	3.19E-2	2.24E+0	1.10E+1	
b) Avg. Concentration Released	uCi/ml	8.48E-10	1.08E-9	1.33E-10	9.41E-10	8.37E-10	2.69E-8	1.54E-9	2.72E-9	1.59E-7	1.59E-7	2.90E-8	5.57E-10	4.41E-9	1.86E-8	
c) Max. Concentration Released	uCi/ml	5.22E-9	1.06E-8	7.33E-10	8.09E-9	3.13E-9	1.87E-7	1.97E-8	2.88E-8	1.69E-6	4.32E-7	8.84E-8	2.05E-8	1.87E-7	1.69E-6	
2. Tritium																
a) Total Release	Curries	7.23E+1	2.27E+2	3.74E 0	1.67E+2	2.67E+2	2.95E+2	5.09E+1	8.43E+1	4.48E+2	2.08E+2	3.92E+2	9.77E+1	1.03E+3	2.32E+3	
b) Avg. Concentration Released	uCi/ml	1.47E-6	5.11E-6	7.44E-8	3.55E-6	5.35E-6	7.43E-6	1.22E+6	1.69E-6	9.39E-6	4.14E-6	8.12E-6	2.01E-6	3.67E-5	3.93E-6	
3. Dissolved Noble Gases																
a) Total Release	Curries	1.53E-2	8.44E 0	<LLD	<LLD	<LLD	<LLD	7.70E-1	<LLD	<LLD	<LLD	<LLD	<LLD	8.89E+0	<LLD	
b) Avg. Concentration Released	uCi/ml	3.11E-10	1.90E-7	<LLD	<LLD	<LLD	<LLD	1.94E-8	<LLD	<LLD	<LLD	<LLD	<LLD	1.84E-7	<LLD	
4. Gross Alpha Radioactivity																
a) Total Release	Curries	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	5.13E-5	6.88E-6	<LLD	2.26E-5	2.82E-5	1.51E-5	<LLD	<LLD	
b) Avg. Concentration Released	uCi/ml	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	1.29E-12	1.38E-13	<LLD	4.74E-13	5.61E-13	3.13E-13	<LLD	<LLD	
5. Volume of liquid waste to discharge canal	Liters	4.82E+6	4.72E+6	6.58E+6	1.44E+6	9.61E+6	7.33E+5	1.72E+5	3.04E+5	4.69E+5	3.53E+5	6.65E+5	1.74E+5	2.79E+7	3.41E+7	
6. Volume of Dilution Water	Liters	4.93E+10	4.44E+10	5.03E+10	4.70E+10	4.99E+10	3.97E+10	4.99E+10	4.99E+10	4.77E+10	5.03E+10	4.83E+10	4.86E+10	92.81E+11	5.90E+11	
7. Isotopes Released	Curries			2.0 E-3			2.24E-1							2.0E-3	2.0E-3	
C-14							1.1 E-3							2.24E-1	2.24E-1	
Cr-51							1.97E-1							2.8E-3	7.92E-3	
Mn-54							1.1 E-3							1.02E-4	1.97E-1	
Fe-59							3.19E-1							1.97E-1	9.27E+0	
Co-58							5.78E-2							3.52E-1	6.89E-1	
Co-60							5.30E-2							9.01E-2	6.89E-1	
Zn-65							6.93E-3							<LLD	<LLD	
Sr-89														1.63E-2	1.63E-2**	
Sr-90														6.73E-4	6.73E-4**	
Ag-110m							1.63E-2							2.97E-2	2.97E-2	
Sb-124							4.5 E-3							<LLD	<LLD	
I-131							7.4 E-3							1.83E-2	2.52E-2	
I-133							1.09E-2							<LLD	<LLD	
Tc-99m														3.15E-2	3.15E-2	
Xe-133							7.70E-1							9.02E-1	8.81E+0	
Xe-133m														<LLD	<LLD	
Xe-135														8.23E+0	9.30E+0	
Cs-134							7.3 E-3							3.54E-3	6.47E-3	
Cs-137							1.41E-2							1.04E-3	4.67E-2	
Ba-140														5.66E-3	1.72E-2	
S-35														3.9E-3	3.9E-3	
Fe-55							2.11E-1							2.43E-1	3.72E-1	
Ni-63														6.23E-3	6.23E-3	
Nb-95							1.60E-2							1.60E-2	1.60E-2	
Ru-103							1.36E-2							1.36E-2	1.35E-2	
8. Percent of Tech. Spec. Limit For Total Activity Released	%	4.97E-2	1.72E-1	2.50E-3	1.21E-1	2.62E-1	3.39E-1	4.33E-2	6.28E-2	5.04E-1	1.76E-1	3.31E-1	6.92E-2	1.52E-1	2.92E-1*	

IA=Independent Analyst

\*Without tritium and noble gases  
\*\* Tentative







