



REFERENCE 10

Table B-1

from

Limerick Generating Station Radiological Environmental
Monitoring Program,
1971-1977,

Prepared For

Philadelphia Electric Company by Management Corporation,
May 1979

NUCLEAR REGULATORY COMMISSION

Docket No. 50-352/353 Official Exh. No. 102
In the matter of PECO-Limerick 102
Staff _____ IDENTIFIED
Applicant RECEIVED _____
Intervenor _____ REJECTED _____
Cont'g Off'r _____
Contractor _____ DATE 6/19/84
Other _____ Witness _____
Reporter Mary Simon

Table B-1 item

Line-side Grounding System Radiological Environmental
Monitoring Program, 1971-1977 Report for the Pennsylvania
Electric Company by Radiation Management Corporation, 1977

TABLE 3-1
 CONCENTRATIONS OF 9-90 IN SURFACE WATER (Composite-Total Sample)
 Results in units of $\mu\text{Ci/l} \pm 2 \text{ sigma}$
 1971

STATION NO.	SAMPLE PERIOD	6-15-71 to 9-20-71	9-20-71 to 12-21-71	AVERAGE*
L-SB-16C1		<1	<1	<1
L-SB-16C2		<1	<1	<1
STATION NO.	SAMPLE PERIOD	9-20-71 to 12-21-71		
L-SB-8F1		<1	<1	<1
STATION NO.	SAMPLE PERIOD	4-29-71 to 6-15-71	6-15-71 to 9-21-71	
L-SB-20F1		<1	<1	<1
L-SB-20F2		141	<1	47
STATION NO.	SAMPLE PERIOD	8-25-71 to 9-19-71	9-19-71 to 12-19-71	
L-SB-6H1		<1	<1	<1
STATION NO.	SAMPLE PERIOD	6-30-71 to 9-21-71	9-21-71 to 12-21-71	
L-SB-13M1		<1	<1	<1
L-SB-13M2		<1	<1	<1
AVERAGE (1)**	1	<1	<1	47

* For calculation of averages, a less than value is taken to equal that value; therefore the mean and deviations are approximations. If all values are less than the minimum detectable level, then the average is less than the minimum detectable level.

(1) The quarterly average is for all 8 samples. Deviations wherever possible $\pm 2 \text{ sigma}$.

TABLE B-1

CONCENTRATIONS OF Sr-90 IN SURFACE WATER (Composite- Total Sample)

Results in Units of pCi/l \pm 2 sigma

1972

STATION NO.	SAMPLE PERIOD	12-21-71 to 3-20-72	3-20-72 to 6-20-72	6-20-72 to 9-18-72	9-18-72 to 12-18-72	AVERAGE*
L-SW-20S2		<1	<1	<1	<1	<1
L-SW-16C1		<1(1)	<1	<1	<1	<1
L-SW-16C2		<1	<1	<1	<1	<1
L-SW-28F1		<1(1)	<1	<1	<1	<1
L-SW-28F2		<1(1)	<1	<1	<1	<1

STATION NO.	SAMPLE PERIOD	1-16-72 to 3-19-72	4-15-72 to 6-20-72	7-17-72 to 9-17-72	10-14-72 to 12-17-72	AVERAGE*
L-SW-8F1		<1	1.5 \pm 0.4	1 \pm 1	<1	1.1 \pm 0.5
L-SW-6H1		<1	<1	<1	<1	<1

STATION NO.	SAMPLE PERIOD	12-21-72 to 3-21-72	3-21-72 to 6-20-72	6-20-72 to 9-19-72	9-19-72 to 12-19-72	AVERAGE*
L-SW-13H1		<1	<1	<1	<1	1
L-SW-13H2		<1	<1	<1	<1	<1
AVERAGE*(2)		<1	1.0 \pm 0.3	1	<1	1.0 \pm 0.2

* For calculation of averages, a less than value is taken to equal that value; therefore the mean and deviations are approximations. If all values are less than the minimum detectable level, then the average is less than the minimum detectable level.

- (1) The sample period was 12-20-71 to 3-20-72.
- (2) The quarterly averages include all sampling stations in the quarter.

TABLE B-1

CONCENTRATIONS OF Sr-90 IN SURFACE WATER (Composite-Total Sample)

Results in Units of pCi/l \pm 2 sigma

1973

STATION NO.	NUCLIDE	SAMPLE PERIOD	12-18-72 to 3-19-73	3-19-73 to 6-19-73	6-19-73 to 9-17-73	9-17-73 to 12-17-73	AVERAGE*
L-SW-20S2	Sr-89 Sr-90		- <0.7	<0.8(1) <0.6(1)	<0.9(2) 0.7 \pm 0.5(2)	<1 <0.6	<0.9 0.6 \pm 0.1
L-SW-16C1	Sr-89 Sr-90		- <0.7	<0.5 <0.3	<1 <0.7	<1 <0.6	<0.8 <0.6
L-SW-16C2	Sr-89 Sr-90		- <0.8	<0.6 <0.4	<1 <0.6	<1 <0.5	<0.9 <0.6
L-SW-28F1	Sr-89 Sr-90		- <0.7	<0.8 0.4 \pm 0.3	<1 <0.7	<1 <0.6	<0.9 0.6 \pm 0.3
L-SW-28F2	Sr-89 Sr-90		- <0.6	<0.8 <0.6	1.9 \pm 0.7 <0.6	<1 <0.6	1.2 \pm 1.2 <0.6
STATION NO.	NUCLIDE	SAMPLE PERIOD	1-14-73 to 3-18-73	4-14-73 to 6-19-73	7-29-73 to 9-14-73	10-15-73 to 12-15-73	
L-SW-6F1	Sr-89 Sr-90		- <0.7	<0.7 <0.4	<1 <0.8	<1 <0.6	<0.9 <0.6
L-SW-6H1	Sr-89 Sr-90		- <0.7	<0.5 <0.3	<1 <0.8	<1 <0.6	<0.8 <0.6

TABLE B-1

CONCENTRATIONS OF Sr-89 AND Sr-90 IN SURFACE WATER (Composite-Total Sample) (Cont.)

Results in pCi/l \pm 2 sigma

1973

STATION NO.	NUCLIDE	SAMPLE PERIOD	12-19-72 to 3-19-73	3-20-73 to 6-20-73	7-19-73 to 9-18-73	9-18-73 to 12-18-73	AVERAGE*
L-SW-13H1	Sr-89		-	<0.6	<0.9	<1	<0.8
	Sr-90		<0.7	<0.4	<0.6	<0.6	<0.6
L-SW-13H2	Sr-89		-	<0.6	<1	<1	<0.9
	Sr-90		<0.6	<0.4	<0.7	<0.6	<0.6
STATION NO.	NUCLIDE	SAMPLE PERIOD			7-23-73 to 8-27-73		
L-SW-15F2	Sr-89				<1		<1
	Sr-90				<0.9		<0.9
L-SW-15F3	Sr-89				<1		<1
	Sr-90				<0.8		<0.8
AVERAGE*(3)	Sr-89		-	<0.6	1.1 \pm 0.6	<1	0.9 \pm 0.5
	Sr-90		<0.7	0.4 \pm 0.2	0.7 \pm 0.2	<0.6	0.6 \pm 0.3

A dash (-) indicates no analysis was performed.

* For calculation of averages, a less than value is taken to equal that value; therefore, the mean and deviations are approximations. If all values are less than minimum detectable level, then the average is less than minimum detectable level.

- (1) Sample period was 3-19-73 to 6-20-73.
- (2) Sample period was 6-20-73 to 9-17-73.
- (3) The quarterly averages include all sampling stations in the quarter.

TABLE B-1

CONCENTRATIONS OF Sr-89 AND Sr-90 IN SURFACE WATER (Composite-Total Sample)

Results in Units of pCi/l \pm 2 sigma

1974

STATION NO.	NUCLIDES	SAMPLE PERIOD	12-17-73 to 3-18-74	4-15-74 to 6-18-74	6-18-74 to 9-16-74	9-16-74 to 12-14-74	AVERAGE*
L-SW-20S2	Sr-89 Sr-90		<0.6 <0.6	<0.5 <0.6	<0.9(1) <0.9(1)	<0.5(2) <0.6(2)	<0.6 <0.7
L-SW-16C1	Sr-89 Sr-90		<0.5 <0.5	<0.5 <0.6	<1 <0.9	<0.6 <0.6	<0.6 <0.6
L-SW-16C2	Sr-89 Sr-90		<0.6 <0.6	<0.5 <0.6	<1 <0.8	<0.6 <0.6	<0.7 <0.6
L-SW-28F1	Sr-89 Sr-90		<0.5 <0.5	<0.5 <0.6	<0.8 <0.8	<0.6 <0.6	<0.6 <0.6
L-SW-28F2	Sr-89 Sr-90		<0.6 <0.7	<0.5 <0.6	<1 <0.9	<0.6 <0.6	<0.7 <0.7
STATION NO.	NUCLIDES	SAMPLE PERIOD	1-13-74 to 3-12-74	4-27-74 to 6-15-74	6-18-74 to 9-16-74	10-14-74 to 12-14-74	
L-SW-8F1	Sr-89 Sr-90		<0.7 <0.8	<0.5 <0.6	<1 <1	<0.6 <0.7	<0.7 <0.8
L-SW-8H1	Sr-89 Sr-90		<0.8 <0.8	<0.5 <0.6	<1 <1	<0.7 0.8 \pm 0.6	<0.8 0.8 \pm 0.3

TABLE B-1

CONCENTRATIONS OF Sr-89 AND Sr-90 IN SURFACE WATER (Composite-Total Sample)(cont.)

Results in Units of pCi/l \pm 2 sigma

1974

STATION NO.	NUCLIDES	SAMPLE PERIOD	12-18-74,	4-16-74	6-18-74	9-17-74	AVERAGE*
			to 3-20-74	to 6-18-74	to 9-17-74	to 12-17-74	
L-SW-13H1	Sr-89		<0.7	<0.5	<0.7	<0.8	<0.7
	Sr-90		<0.8	<0.6	<0.7	1.5 \pm 0.8	0.9 \pm 0.8
L-SW-13H2	Sr-89		<0.5	2.7 \pm 0.4	<1	<0.6	1.2 \pm 2.0
	Sr-90		<0.5	<0.7	<0.9	<0.6	<0.7
AVERAGE* (3)	Sr-89		<0.6	0.7 \pm 1.5	<0.9	<0.6	0.7 \pm 0.8
	Sr-90		<0.6	<0.6	<0.9	0.7 \pm 0.6	0.7 \pm 0.4

* For calculation of averages, a less than value is taken to equal that value; therefore the mean and deviations are approximations. If all values are less than the minimum detectable level, the average is less than the minimum detectable level.

- (1) Sample period was 6-18-74 to 9-17-74.
- (2) Sample period was 9-17-74 to 12-16-74.
- (3) The quarterly averages include all sampling stations in the quarter.

TABLE B-1

CONCENTRATIONS OF Sr-89 AND Sr-90 IN SURFACE WATER (Composite-Total Sample)

Results in Units of pCi/l \pm 2 sigma

1975

STATION NO.	NUCLIDE	SAMPLE PERIOD	12-14-74 to 3-14-75	3-14-75 to 6-16-75	6-16-75 to 9-15-75	9-15-75 to 12-15-75	AVERAGE*
L-SW-20S2	Sr-89 Sr-90		<1(1) <0.6(1)	<0.8 <0.3	<2 <0.6	<2 <0.6	<1.4 <0.5
L-SW-16C1	Sr-89 Sr-90		<1 <0.5	<0.8 <0.3	<2 <0.7	<1 <0.5	<1.2 <0.5
L-SW-16C2	Sr-89 Sr-90		<1 <0.5	<0.9 0.4 \pm 0.4	<2 <0.6	<1 <0.5	<1.2 0.5 \pm 0.2
STATION NO.	NUCLIDE	SAMPLE PERIOD	12-14-74 to 3-15-75	3-15-75 to 6-17-75	6-17-75 to 9-15-75	6-15-75 to 12-15-75	AVERAGE*
L-SW-28F1	Sr-89 Sr-90		<2 <0.6	<0.9 0.5 \pm 0.4	<2 <0.7	<1 <0.5	<1.5 0.6 \pm 0.2
L-SW-28F2	Sr-89 Sr-90		<1 <0.6	<0.9 <0.4	<1 <0.5	<2 0.8 \pm 0.5	<1.2 0.6 \pm 0.3
STATION NO.	NUCLIDE	SAMPLE PERIOD	1-19-75 to 3-23-75	4-05-75 to 6-08-75	7-11-75 to 9-14-75	10-17-75 to 12-12-75	AVERAGE*
L-SW-8F1	Sr-89 Sr-90		<1 <0.5	1.0 \pm 0.9 <0.4	<1 <0.6	<1 0.7 \pm 0.5	1.0 0.6 \pm 0.2
L-SW-6H1	Sr-89 Sr-90		<1 <0.5	<0.9 <0.4	<1 <0.6	<1 0.6 \pm 0.6	<1.0 0.5 \pm 0.2

TABLE B-1
 CONCENTRATIONS OF Sr-89 AND Sr-90 IN SURFACE WATER (Composite-Total Sample)

Results in Units of pCi/l \pm 2 sigma

1975

STATION NO.	NUCLIDE	SAMPLE PERIOD	12-17-74	3-18-75	6-17-75	9-16-75	AVERAGE*
			to 3-18-75	to 6-17-75	to 9-16-75	to 12-16-75	
L-SW-13H1	Sr-89		<1	<0.8	<2	<2	<1.4
	Sr-90		<0.5	0.5 \pm 0.3	<0.8	<0.6	0.6 \pm 0.3
L-SW-13H2	Sr-89		<1	<1	<1	<1	<1
	Sr-90		<0.5	<0.4	<0.6	<0.6	<0.5
AVERAGE(2)*	Sr-89		<1	0.9 \pm 0.2	<2	<1	1.2 \pm 0.9
	Sr-90		<0.5	0.4 \pm 0.1	<0.6	0.6 \pm 0.2	0.5 \pm 0.2

* For calculation of averages, a less than value is taken to equal that value; therefore, the mean and deviations are approximations. If all values are less than the minimum detectable level, then the average is less than the minimum detectable level.

- (1) Sample period was 12-16-74 to 3-14-75.
 (2) The quarterly averages include all stations in the quarter.

TABLE B-1

CONCENTRATIONS OF Sr-89 AND Sr-90 IN SURFACE WATER (Composite - Total Sample)

Results in Units of pCi/l \pm 2 sigma

1977

GRAB SAMPLES

STATION NO.	NUCLIDE	SAMPLE PERIOD	1-16-77	4-15-77	7-18-77	10-16-77	AVERAGE*
L-SW-8F1	Sr-89		<0.8	<0.7	0.7 \pm 0.5	<0.4	0.6 \pm 0.3
	Sr-90		0.3 \pm 0.2	0.9 \pm 0.5	<0.3	0.5 \pm 0.2	0.5 \pm 0.6
L-SW-6H1	Sr-89		<0.5	<0.5	0.5 \pm 0.4	<0.4	0.5 \pm 0.1
	Sr-90		0.3 \pm 0.3	0.4 \pm 0.3	<0.3	0.5 \pm 0.2	0.4 \pm 0.2

COMPOSITE SAMPLES

STATION NO.	NUCLIDE	SAMPLE PERIOD	12-20-76 to 1-17-77	3-14-77 to 4-19-77	6-21-77 to 7-18-77	9-19-77 to 10-18-77	AVERAGE*
L-SW-20S2	Sr-89		<0.5 ⁽¹⁾	<0.5 ⁽²⁾	2 \pm 2 ⁽³⁾	<0.6 ⁽⁴⁾	0.9 \pm 1.5
	Sr-90		<0.3	<0.3	<0.7	<0.3	<0.4
L-SW-16C1	Sr-89		<0.7	<0.5	<0.4	<0.6	0.6 \pm 0.2
	Sr-90		<0.2	0.4 \pm 0.3	<0.2	<0.3	0.3 \pm 0.2
L-SW-28F1	Sr-89		<0.9	<0.5	1.1 \pm 0.5	<0.6 ⁽⁵⁾	0.8 \pm 0.6
	Sr-90		0.2 \pm 0.2	0.5 \pm 0.3	<0.3	1.1 \pm 0.3	0.5 \pm 0.8
L-SW-13H1	Sr-89		<0.9 ⁽⁶⁾	<0.5 ⁽⁷⁾	<0.5 ⁽⁸⁾	0.6 \pm 0.5 ⁽⁹⁾	0.6 \pm 0.4
	Sr-90		0.4 \pm 0.3	<0.3	<0.3	0.4 \pm 0.3	0.4 \pm 0.1
AVERAGE*(10)	Sr-89		<0.7	<0.5	0.9 \pm 1.2	0.5 \pm 0.2	0.7 \pm 0.7
	Sr-90		0.3 \pm 0.2	0.5 \pm 0.4	<0.4	0.5 \pm 0.6	0.4 \pm 0.4

* For calculation of averages, a less than value is taken to equal that value; therefore, the mean and deviation are approximations. If all values are less than the minimum detectable level, then the average is less than the minimum detectable level.

- (1) Sample period was 1-11-77 to 1-17-77.
 (2) Sample period was 3-18-77 to 4-08-77.
 (3) Sample period was 6-10-77 to 7-01-77.
 (4) Sample period was 9-23-77 to 10-14-77.
 (5) Sample period was 9-19-77 to 10-17-77.

- (6) Sample period was 12-21-76 to 1-18-77.
 (7) Sample period was 3-15-77 to 4-19-77.
 (8) Sample period was 6-21-77 to 7-19-77.
 (9) Sample period was 9-20-77 to 10-18-77.
 (10) The quarterly averages include all stations in the quarter.

CONCENTRATIONS OF Sr-89 AND Sr-90 IN SURFACE WATER (Composite-Total Sample)

Results in Units of pCi/l \pm 2 sigma

1976

GRAB SAMPLES

STATION NO.	NUCLIDE	SAMPLE PERIOD	3-14-76	6-14-76	9-18-76	12-19-76	AVERAGE*
L-SW-8F1	Sr-89		<0.8	<0.7	<0.7	0.6 \pm 0.5	0.7 \pm 0.2
	Sr-90		<0.4	<0.5	0.6 \pm 0.4	<0.3	0.4 \pm 0.3
L-SW-6H1	Sr-89		<1	<0.6	<0.6	<0.5	<0.7
	Sr-90		<0.5	<0.4	<0.3	<0.3	<0.4

COMPOSITE SAMPLES

STATION NO.	NUCLIDE	SAMPLE PERIOD	12-15-75 to 3-17-76	5-17-76 to 6-15-76	8-17-76 to 9-23-76	11-16-76 to 12-20-76	AVERAGE*
L-SW-20S2	Sr-89		<1	<1	<0.9	<0.6 ⁽¹⁾	<0.8
	Sr-90		<0.4	<0.7	1.9 \pm 0.5	1.1 \pm 0.3	1.0 \pm 1.3
L-SW-16C1	Sr-89		<0.4	<1	<0.7 ⁽²⁾	3.6 \pm 0.8	1.4 \pm 2.9
	Sr-90		<0.9	<0.5	<0.3	<0.3	<0.5
L-SW-28F1	Sr-89		<1	<0.9	<0.6	<1	<0.9
	Sr-90		<0.4	<0.5	<0.3	<0.5	<0.4
L-SW-13H1	Sr-89		<1 ⁽³⁾	<2 ⁽⁴⁾	0.8 \pm 0.7	<0.5 ⁽⁵⁾	1.1 \pm 1.3
	Sr-90		<0.4	<1	<0.3	<0.2	<0.5
AVERAGE ⁽⁶⁾	Sr-89		<0.9	<1.0	0.7 \pm 0.2	1.1 \pm 2.4	0.9 \pm 1.3
	Sr-90		<0.5	<0.6	0.6 \pm 1.3	0.4 \pm 0.7	0.5 \pm 0.7

* For calculation of averages, a less than value is taken to equal that value; therefore, the mean and deviations are approximations. If all values are less than the minimum detectable level, then the average is less than the minimum detectable level.

- (1) Sample period was 11-16-76 to 1-11-77.
- (2) Sample period was 8-17-76 to 9-18-76.
- (3) Sample period was 12-16-75 to 3-19-76.
- (4) Sample period was 5-18-76 to 6-15-76.
- (5) Sample period was 11-16-76 to 12-21-76.
- (6) The quarterly averages include all stations in the quarter.