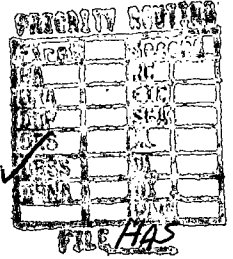




Commonwealth Edison
LaSalle County Nuclear Station
2601 N. 21st. Rd.
Marseilles, Illinois 61341
Telephone 815/357-6761

February 26, 1992



Mr. Bert Davis
Administrator
Nuclear Regulatory Commission, Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Dear Mr. Davis:

Enclosed is the Semi-annual Radioactive Effluent Report for July through December, 1991 for LaSalle County Nuclear Power Station, Docket Numbers 50-373 and 50-374.

Two copies of the report are provided for your use. Two copies will be forwarded to the Document Control Desk and one copy to the Resident Inspector.

Sincerely,

G. J. Diederich
for Station Manager
LaSalle County Nuclear Station

GJD/JAH/djf

enc.

cc: Director of Nuclear Reactor Regulation
Illinois Dept. of Nuclear Safety
American Nuclear Insurers
B. P. I.
U.S. EPA
Illinois EPA
Murray and Trettel, Inc.
Teledyne Isotopes Midwest Laboratory
Nuclear Quality Program and Assessments
Chemistry Services
Health Physics Services Supervisor (LaSalle)
NRC Resident Inspector (LaSalle)
Nuclear Quality Programs Supt. (LaSalle)
Chemistry Services Supv. (LaSalle)
EP Coordinator (LaSalle)
Illini State Park
Station File
EP File: EPG-01-R09

ZCSTAMGR/176+

050066

9203060025 911231
PDR ADOCK 05000373
R PDR

FEB 28 1992

LASALLE COUNTY NUCLEAR POWER STATION
UNITS ONE AND TWO
DOCKET NUMBERS 50-373 AND 50-374

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

			<u>Third Quarter</u>	<u>Fourth Quarter</u>
A. Fission and Activation Gases				
1.	Total release	Ci	4.33E+1	5.86E+1
2.	Average release rate for period	uCi/sec	2.72E0	3.69E0
B. Iodines				
1.	Total iodine-131	Ci	8.22E-4	2.04E-4
2.	Average release rate for period	uCi/sec	5.16E-5	1.28E-5
C. Particulates				
1.	Particulates with T1/2 >8 days	Ci	2.20E-3	1.26E-3
2.	Average release rate for period	uCi/sec	1.38E-4	7.93E-5
3.	Gross alpha radioactivity (estimate)	Ci	<1.00E-11	<1.00E-11
D. Tritium				
1.	Total release	Ci	8.53E-2	2.88E-1
2.	Average release rate for period	uCi/sec	5.36E-3	1.81E-2

"<" indicates activity of sample is less than LLD given in uci/ml

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

GASEOUS EFFLUENTS-ELEVATED RELEASE

Nuclides Released		<u>July</u>	<u>August</u>	<u>September</u>	<u>Third Quarter</u>
1. Fission Gases					
Ar-41	Ci	4.40E-4	1.20E-4	<1.00E-6	5.60E-4
Kr-85	Ci	<1.00E-6	<1.00E-6	<1.00E-6	<1.00E-6
Kr-85m	Ci	3.87E0	<1.00E-6	5.13E0	9.00E0
Kr-87	Ci	<1.00E-6	<1.00E-6	1.44E+1	1.44E+1
Kr-88	Ci	<1.00E-6	<1.00E-6	1.99E+1	1.99E+1
Xe-133	Ci	6.60E-4	<1.00E-6	7.40E-4	1.40E-3
Xe-133m	Ci	<1.00E-6	<1.00E-6	<1.00E-6	<1.00E-6
Xe-135	Ci	8.10E-4	<1.00E-6	1.93E-3	2.74E-3
Xe-138	Ci	<1.00E-6	<1.00E-6	<1.00E-6	<1.00E-6
Total for period	Ci	3.87E0	1.20E-4	3.94E+1	4.33E+1
2. Iodines					
I-131	Ci	3.34E-4	2.61E-4	2.27E-4	8.22E-4
I-132	Ci	1.17E-3	5.15E-4	2.79E-4	1.96E-3
I-133	Ci	3.28E-3	2.70E-3	2.23E-3	8.21E-3
I-134	Ci	4.91E-3	<1.00E-11	<1.00E-11	4.91E-3
I-135	Ci	1.73E-3	9.51E-4	4.20E-4	3.10E-3
Total for period	Ci	1.14E-2	4.43E-3	3.16E-3	1.90E-2
3. Particulates					
Cr-51	Ci	1.95E-4	1.35E-3	3.50E-4	1.90E-3
Mn-54	Ci	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4
Co-58	Ci	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4
Fe-59	Ci	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4
Co-60	Ci	2.67E-5	1.63E-4	1.16E-4	3.06E-4
Zn-65	Ci	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4
Sr-89 (estimate)	Ci	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4
Sr-90 (estimate)	Ci	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4
Mo-99	Ci	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4
Cs-134	Ci	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4
Cs-137	Ci	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4
Cs-141	Ci	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4
Cs-144	Ci	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4
Total for period	Ci	2.22E-4	1.51E-3	4.66E-4	2.20E-3

"<" indicates activity of sample is less than LLD given uci/ml

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

GASEOUS EFFLUENTS-ELEVATED RELEASE

Nuclides Released		<u>October</u>	<u>November</u>	<u>December</u>	<u>Fourth Quarter</u>
1. Fission Gases					
Kr-85m	Ci	3.39E0	6.58E0	1.10E+1	2.10E+1
Kr-87	Ci	<1.00E-6	4.30E-4	1.17E+1	1.17E+1
Kr-88	Ci	<1.00E-6	1.47E-3	2.59E+1	2.59E+1
Xe-133	Ci	2.70E-4	1.06E-3	9.25E-4	2.26E-3
Xe-133m	Ci	<1.00E-6	<1.00E-6	<1.00E-6	<1.00E-6
Xe-135	Ci	8.18E-4	7.17E-4	8.08E-4	2.34E-3
Xe-138	Ci	<1.00E-6	<1.00E-6	<1.00E-6	<1.00E-6
Total for period	Ci	3.39E0	6.58E0	4.86E+1	5.86E+1
2. Iodines					
I-131	Ci	2.47E-5	6.53E-5	1.14E-4	2.04E-4
I-132	Ci	1.15E-4	2.30E-4	1.26E-3	1.61E-3
I-133	Ci	5.29E-4	5.60E-4	1.23E-3	2.32E-3
I-134	Ci	<1.00E-11	<1.00E-11	<1.00E-11	<1.00E-11
I-135	Ci	<1.00E-11	1.89E-4	<1.00E-11	1.89E-4
Total for period	Ci	6.69E-4	1.04E-3	2.60E-3	4.32E-3
3. Particulates					
Mn-54	Ci	1.73E-5	<1.00E-4	<1.00E-4	1.73E-5
Co-58	Ci	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4
Fe-59	Ci	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4
Co-60	Ci	3.19E-4	8.88E-4	3.61E-5	1.24E-3
Zn-65	Ci	<1.00E-04	<1.00E-4	<1.00E-4	<1.00E-4
Sr-89 (estimate)	Ci	<1.00E-04	<1.00E-4	<1.00E-4	<1.00E-4
Sr-90 (estimate)	Ci	<1.00E-04	<1.00E-4	<1.00E-4	<1.00E-4
Mo-99	Ci	<1.00E-04	<1.00E-4	<1.00E-4	<1.00E-4
Cs-134	Ci	<1.00E-04	<1.00E-4	<1.00E-4	<1.00E-4
Cs-137	Ci	<1.00E-04	<1.00E-4	<1.00E-4	<1.00E-4
Cs-141	Ci	<1.00E-04	<1.00E-4	<1.00E-4	<1.00E-4
Cs-144	Ci	<1.00E-04	<1.00E-4	<1.00E-4	<1.00E-4
Total for period	Ci	3.36E-4	8.88E-4	3.61E-5	1.26E-3

"<" indicates activity of sample is less than LLD given uci/ml

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

UNIT ONE

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

		<u>Third Quarter</u>	<u>Fourth Quarter</u>
A. Fission and Activation Products			
1. Total release (not including tritium, gases, alpha)	Ci	0.0E0	0.0E0
2. Average concentration released	uCi/ml	N/A	N/A
3. Maximum concentration released	uCi/ml	N/A	N/A
B. Tritium			
1. Total release	Ci	0.0E0	0.0E0
2. Average concentration released	uCi/ml	N/A	N/A
C. Dissolved Noble Gases			
1. Total release	Ci	0.0E0	0.0E0
2. Average concentration released	uCi/ml	N/A	N/A
D. Gross Alpha Radioactivity			
1. Total release	Ci	0.0E0	0.0E0
2. Average concentration released	uCi/ml	N/A	N/A
E. Volume of Waste Released	liters	0.0E0	0.0E0
F. Volume of Dilution Water	liters	0.0E0	0.0E0

"<" indicates activity of sample is less than LLD given in uCi/ml

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

UNIT ONE

LIQUID EFFLUENTS

Nuclides Released		<u>July</u>	<u>August</u>	<u>September</u>	<u>Third Quarter</u>
Ar-41	Ci				
Mn-54	Ci	No	No	No	
Fe-55	Ci	Releases	Releases	Releases	
Co-58	Ci				
Fe-59	Ci				
Co-60	Ci				
Zn-65	Ci				
Kr-85m	Ci				
Kr-85	Ci				
Kr-87	Ci				
Kr-88	Ci				
Sr-89	Ci				
Sr-90	Ci				
Mo-99	Ci				
I-131	Ci				
Xe-131m	Ci				
Xe-133	Ci				
Xe-133m	Ci				
Cs-134	Ci				
Xe-135	Ci				
Xe-135m	Ci				
Cs-137	Ci				
Ce-141	Ci				
Ce-144	Ci				
Total for period	Ci	0.0E0	0.0E0	0.0E0	0.0E0

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

UNIT ONE

LIQUID EFFLUENTS

Nuclides Released		<u>October</u>	<u>November</u>	<u>December</u>	<u>Fourth Quarter</u>
Ar-41	Ci				
Mn-54	Ci	No	No	No	
Fe-55	Ci	Releases	Releases	Releases	
Co-58	Ci				
Fe-59	Ci				
Co-60	Ci				
Zn-65	Ci				
Kr-85m	Ci				
Kr-85	Ci				
Kr-87	Ci				
Kr-88	Ci				
Sr-89	Ci				
Sr-90	Ci				
Mo-99	Ci				
I-131	Ci				
Xe-131m	Ci				
Xe-133	Ci				
Xe-133m	Ci				
Cs-134	Ci				
Xe-135	Ci				
Xe-135m	Ci				
Cs-137	Ci				
Ce-141	Ci				
Ce-144	Ci				
Total for period	Ci	0.0E0	0.0E0	0.0E0	0.0E0

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

UNIT TWO

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

		<u>First Quarter</u>	<u>Second Quarter</u>
A. Fission and Activation Products			
1. Total release (not including tritium, gases, alpha)	Ci	0.0E0	0.0E0
2. Average concentration released	uCi/ml	N/A	N/A
3. Maximum concentration released	uCi/ml	N/A	N/A
B. Tritium			
1. Total release	Ci	0.0E0	0.0E0
2. Average concentration released	uCi/ml	N/A	N/A
C. Dissolved Noble Gases			
1. Total release	Ci	0.0E0	0.0E0
2. Average concentration released	uCi/ml	N/A	N/A
D. Gross Alpha Radioactivity			
1. Total release	Ci	0.0E0	0.0E0
2. Average concentration released	uCi/ml	N/A	N/A
E. Volume of Waste Released	liters	0.0E0	0.0E0
F. Volume of Dilution Water	liters	0.0E0	0.0E0

"<" indicates activity of sample is less than LLD given in uCi/ml

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

UNIT TWO

LIQUID EFFLUENTS

Nuclides Released		<u>July</u>	<u>August</u>	<u>September</u>	<u>Third Quarter</u>
Ar-41	Ci				
Mn-54	Ci	No	No	No	
Fe-55	Ci	Releases	Releases	Releases	
Co-58	Ci				
Fe-59	Ci				
Co-60	Ci				
Zn-65	Ci				
Kr-85m	Ci				
Kr-85	Ci				
Kr-87	Ci				
Kr-88	Ci				
Sr-89	Ci				
Sr-90	Ci				
Mo-99	Ci				
I-131	Ci				
Xe-131m	Ci				
Xe-133	Ci				
Xe-133m	Ci				
Cs-134	Ci				
Xe-135	Ci				
Xe-135m	Ci				
Cs-137	Ci				
Ce-141	Ci				
Ce-144	Ci				
Total for period	Ci	0.0EO	0.0EO	0.0EO	0.0EO

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

UNIT TWO

LIQUID EFFLUENTS

Nuclides Released		<u>October</u>	<u>November</u>	<u>December</u>	<u>Fourth Quarter</u>
Ar-41	Ci				
Mn-54	Ci	No	No	No	
Fe-55	Ci	Releases	Releases	Releases	
Co-58	Ci				
Fe-59	Ci				
Co-60	Ci				
Zn-65	Ci				
Kr-85m	Ci				
Kr-85	Ci				
Kr-87	Ci				
Kr-88	Ci				
Sr-89	Ci				
Sr-90	Ci				
Mo-99	Ci				
I-131	Ci				
Xe-131m	Ci				
Xe-133	Ci				
Xe-133m	Ci				
Cs-134	Ci				
Xe-135	Ci				
Xe-135m	Ci				
Cs-137	Ci				
Ce-141	Ci				
Ce-144	Ci				
Total for period	Ci	0.0E0	0.0E0	0.0E0	0.0E0

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

MAXIMUM DOSES RESULTING FROM RELEASES

			<u>Third Quarter</u>	<u>Fourth Quarter</u>
A. Gaseous Effluents (Units One and Two)				
1.	Gamma air	mrad	1.71E-3	2.10E-3
2.	Beta air	mrad	2.26E-4	2.42E-4
3.	Total body	mrem	1.00E-3	1.23E-3
4.	Skin	mrem	1.52E-3	1.84E-3
5.	Organ (infant thyroid)	mrem	2.65E-4	1.13E-3
B. Liquid Effluents (Unit One)				
1.	Total body	mrem	0.0E0	0.0E0
4.	Internal organ	mrem	0.0E0	0.0E0
C. Liquid Effluents (Unit Two)				
1.	Total body	mrem	0.0E0	0.0E0
4.	Internal organ	mrem	0.0E0	0.0E0

COMPLIANCE STATUS

A. Gaseous Effluents (Units One and Two)				
1.	Gamma air	% of Tech. Spec. Limit	0.03	0.04
2.	Beta air	% of Tech. Spec. Limit	0.00	0.00
3.	Total body	% of Tech. Spec. Limit	0.04	0.05
4.	Skin	% of Tech. Spec. Limit	0.02	0.02
5.	Organ	% of Tech. Spec. Limit	0.04	0.02
B. Liquid Effluents (Unit One)				
1.	Total body	% of Tech. Spec. Limit	0.0	0.0
4.	Internal organ	% of Tech. Spec. Limit	0.0	0.0
C. Liquid Effluents (Unit Two)				
1.	Total body	% of Tech. Spec. Limit	0.0	0.0
4.	Internal organ	% of Tech. Spec. Limit	0.0	0.0

11FFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL

		<u>July</u>	<u>August</u>	<u>September</u>	<u>Third Quarter</u>
1. Spent resins, filter sludges, evaporator bottoms, etc.					
a. Quantity shipped	cu.m.	1.98E+1	1.91E+1	6.67E0	2.43E+1
b. Total activity	Ci	6.62E+2	2.07E+3	2.47E+1	7.32E+1
c. Major nuclides (estimate)					
Mn-54	%	9	9	14	
Fe-55	%	62	61	52	
Co-60	%	22	22	32	
d. Container type		LSA	LSA	LSA	
e. Container volume	cu.m.	3.14E-1 4.20E0 5.28E0 5.83E0	4.20E0 4.84E0 5.83E0	2.47E0 4.20E0	
f. Solidification agent		Cement	Cement	Cement	
2. Dry compressible waste, contaminated equipment, etc.					
a. Quantity shipped	cu.m.	0.0E0	1.57E+2	1.28E+2	2.85E+2
b. Total activity	Ci	0.0E0	2.86E0	8.78E0	1.16E+1
c. Major nuclides (estimate)					
Cr-51	%	0	14	14	
Mn-54	%	0	15	15	
Fe-55	%	0	45	45	
Fe-59	%	0	16	16	
d. Container type		N/A	LSA	LSA	
e. Container volume	cu.m.	0.0E0 0.0E0	2.08E-1 2.72E0 3.51E+1	2.08E-1 2.72E0 3.86E0 4.20E0 3.51E+1	

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL

	<u>July</u>	<u>August</u>	<u>September</u>	<u>Third Quarter</u>
3. Solid Waste Disposition				
a. Number of Shipments	05	09	09	23
b. Mode of Transportation	Truck	Truck	Truck	
Number	05	09	09	
c. Destination	Barnwell, SC	Barnwell, SC	Barnwell, SC	
Number	03	02	01	
	Beatty, NV	Waltzmill, PA	Waltzmill, PA	
Number	02	01	01	
		Oak Ridge, TN	Oak Ridge, TN	
Number		04	04	
		Beatty, NV	Beatty, NV	
Number		02	03	

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL

		<u>October</u>	<u>November</u>	<u>December</u>	<u>Fourth Quarter</u>
1. Spent resins, filter sludges, evaporator bottoms, etc.					
a. Quantity shipped	cu.m.	4.04E+1	9.48E0	0.0E0	3.73E+1
b. Total activity	Ci	2.40E+1	2.25E+2	0.0E0	1.55E+2
c. Major nuclides (estimate)					
Mn-54	%	9	9	0	
Fe-55	%	62	64	0	
Co-60	%	22	23	0	
d. Container type		LSA	LSA	LSA	
e. Container volume	cu.m.	4.20E0 4.84E0 5.83E0	4.20E0 5.28E0	N/A	
f. Solidification agent		Cement	Cement	N/A	
2. Dry compressible waste, contaminated equipment, etc.					
a. Quantity shipped	cu.m.	7.02E+1	0.0E0	8.35E+1	1.58E+2
b. Total activity	Ci	4.31E-1	0.0E0	1.85E-1	1.35E+2
c. Major nuclides (estimate)					
Cr-51	%	14	0	14	
Mn-54	%	15	0	15	
Fe-55	%	45	0	45	
Fe-59	%	16	0	16	
Co-60	%	0	0	0	
d. Container type		LSA	N/A	LSA	
e. Container volume	cu.m.	3.51E+1	0.0E0	2.08E-1 3.51E+1	

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL

	<u>October</u>	<u>November</u>	<u>December</u>	<u>Fourth Quarter</u>
3. Solid Waste Disposition				
a. Number of Shipments	10	02	03	13
b. Mode of Transportation	Truck	Truck	Truck	
Number	10	02	03	
c. Destination	Barnwell, SC	Barnwell, SC	Waltzmill, PA	
Number	06	01	01	
	Oak Ridge, TN	Beatty, NV	Oak Ridge, TN	
Number	02	01	02	
	Beatty, NV			
Number	02			

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

Supplemental Information

1. Regulatory Limits

a. Gaseous effluents

- 1) The air dose due to noble gases released in gaseous effluents, from each reactor unit, from the site shall be limited to the following:
 - a) During any calendar quarter: Less than or equal to 5 mrad for gamma radiation and less than or equal to 10 mrad for beta radiation, and
 - b) During any calendar year: Less than or equal to 10 mrad for gamma radiation and less than or equal to 20 mrad for beta radiation.
- 2) The dose to an individual from radioiodines and radioactive materials in particulate form, and radionuclides, other than noble gases, with half-lives greater than eight days in gaseous effluents released, from each reactor unit, from the site shall be limited to the following:
 - a) During any calendar quarter: Less than or equal to 7.5 mrem to any organ, and
 - b) During any calendar year: Less than or equal to 15 mrem to any organ.

b. Liquid effluents

- 1) The dose or dose commitment to an individual from radioactive materials in liquid effluents released, from each reactor unit, from the site shall be limited:
 - a) During any calendar quarter to less than or equal to 1.5 mrem to the total body and to less than or equal to 5 mrem to any organ, and
 - b) During any calendar year to less than or equal to 3 mrem to the total body and to less than or equal to 10 mrem to any organ.

c. Total dose

- 1) The dose or dose commitment to any member of the public, due to releases or radioactivity and radiation, from uranium fuel cycle sources shall be limited to less than or equal to 25 mrem to the body or any organ (except the thyroid, which shall be limited to less than or equal to 75 mrem) over 12 consecutive months.

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

Supplemental Information (continued)

2. Maximum Permissible Concentrations

a. Gaseous effluents

- 1) The dose rate due to radioactive materials released in gaseous effluents from the site shall be limited to the following:
 - a) For noble gases: Less than or equal to 500 mrems/year to the total body and less than or equal to 3000 mrems/year to the skin, and
 - b) For all radioiodines and for all radioactive materials in particulate form, and radionuclides, other than noble gases, with half-lives greater than eight days: Less than or equal to 1500 mrems/year to any organ via the inhalation pathway.

b. Liquid effluents

- 1) The concentration of radioactive material released from the site shall be limited to the concentrations specified in 10 CFR Part 20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to the following:

<u>Nuclide</u>	<u>MPC (uci/ml)</u>
Kr-85m	2.00E-04
Kr-85	5.00E-04
Kr-87	4.00E-05
Kr-88	9.00E-05
Ar-41	7.00E-05
Xe-131m	7.00E-04
Xe-133m	5.00E-04
Xe-133	6.00E-04
Xe-135m	2.00E-04
Xe-135	2.00E-04

3. Average Energy

- a. Not applicable.

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

Supplemental Information (continued)

4. Measurements and Approximations of Total Radioactivity

a. Gaseous effluents

- 1) Containment Vent and Purge System is sampled by grab sample which is analyzed for principal gamma emitters and H-3.
- 2) Main Vent Stack is sampled by grab sample which is analyzed for principal gamma emitters and H-3.
- 3) Standby Gas Treatment System is sampled by grab sample which is analyzed for principal gamma emitters.
- 4) All release types as listed in 1 and 2 above, at the vent stack and as listed in 3 above, at the Standby Gas Treatment System whenever there is a flow, are continuously sampled by charcoal, particulate and composite samples which are analyzed for iodines, principal gamma emitters, gross alpha, Sr-89 and Sr-90. Noble gases, gross beta and gamma are continuously monitored by noble gas monitors for the vent stack and the standby gas treatment system.

b. Liquid effluents

- 1) Batch waste release tanks are sampled each batch for principal gamma emitters, I-131, dissolved and entrained noble gases, H-3, gross alpha, Sr-89, Sr-90 and Fe-55.
- 2) Continuous releases are sampled continuously in proportion to the rate of flow of the effluent stream and by grab sample. Samples are analyzed for principal gamma emitters, I-131, dissolved and entrained noble gases, H-3, gross alpha, Sr-89, Sr-90 and Fe-55.

5. Batch Releases

a. Gaseous

- | | |
|---|------|
| 1) Number of batch releases: | None |
| 2) Total time period for batch releases: | N/A |
| 3) Maximum time period for a batch release: | N/A |
| 4) Average time period for batch releases: | N/A |
| 5) Minimum time period for a batch release: | N/A |

b. Liquid

- | | |
|---|------|
| 1) Number of batch releases: | None |
| 2) Total time period for batch releases: | N/A |
| 3) Maximum time period for a batch release: | N/A |
| 4) Average time period for batch releases: | N/A |
| 5) Minimum time period for a batch release: | N/A |
| 6) Average stream flow during periods of release of effluent into a flowing stream: | N/A |

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

Supplemental Information (continued)

6. Abnormal Releases

a. Gaseous

- 1) Number of releases: None
- 2) Total activity released: N/A

b. Liquid

- 1) Number of releases: None
- 2) Total activity released: N/A

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1991)

METEOROLOGICAL DATA

(See following pages.)

July-September 1991
375-33 ft. DIFFERENTIAL TEMPERATURE

[illegible]

CECo LASALLE STATION
375 ft. WIND SPEED and WIND DIRECTION

July-September 1991
375-33 ft. DIFFERENTIAL TEMPERATURE

SPEED CLASS	WIND DIRECTION CLASSES																STABILITY CLASSES								TOTAL
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	EU	MU	SU	N	SS	MS	ES	
EU	.00	.00	.05	.19	.00	.00	.00	.05	.00	.23	.28	.09	.00	.00	.00	.23	1.12	1.12							
1 MU	.00	.00	.00	.05	.00	.00	.00	.09	.00	.09	.28	.19	.14	.14	.09	.00	1.08		1.08						
9 SU	.19	.00	.00	.00	.00	.00	.00	.05	.00	.09	.05	.14	.14	.28	.09	.09	1.12			1.12					
- N	.84	.00	.05	.61	.47	.33	.00	.23	.05	.28	.89	.61	.37	.28	.33	.19	5.52				5.52				
2 SS	.28	.37	.05	.00	.98	.89	.33	.28	.23	.80	1.17	.47	.61	.28	.37	.14	7.26					7.26			
4 MS	.09	.00	.00	.00	.14	.14	.28	.33	.33	1.03	.80	.56	.23	.66	.70	.05	5.34						5.34		
ES	.00	.00	.00	.00	.00	.00	.00	.05	.05	.37	.33	.28	.19	.09	.05	.00	1.40							1.40	
																									22.85

EU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.19	.05	.05	.00	.00	.00	.00	.28	.28							
6 MU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.19	.14	.05	.05	.09	.09	.66		.66						
T SU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.19	.09	.19	.05	.05	.61			.61					
N	.00	.00	.00	.00	.00	.00	.00	.00	.09	.05	.09	.09	.00	.28	.23	.00	.84				.84				
2 SS	.00	.00	.00	.00	.05	.05	.19	.09	.09	.75	.89	.09	.00	.05	.56	.00	2.81					2.81			
4 MS	.00	.00	.00	.00	.05	.14	.09	.05	.37	.23	.66	.33	.05	.00	.09	.00	2.06						2.06		
ES	.00	.00	.00	.00	.00	.00	.00	.05	.33	.28	.28	.00	.00	.00	.00	.00	.94							.94	
																									8.19

TOT	5.90	5.38	5.29	5.06	8.85	5.90	3.79	4.17	5.29	8.71	12.41	8.01	4.82	6.09	6.09	4.26	100.00	4.68	9.93	8.80	29.07	26.54	16.34	4.63	100.00
-----	------	------	------	------	------	------	------	------	------	------	-------	------	------	------	------	------	--------	------	------	------	-------	-------	-------	------	--------

Wind Direction by Stability

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	-STABILITY CLASSES-	
.19	.42	.42	.37	.09	.00	.00	.05	.33	1.08	1.12	.37	.00	.00	.00	.23	4.68	Extremely Unstable	
.61	.98	.42	.51	.09	.33	.00	.80	.98	.98	1.87	1.03	.28	.33	.28	.42	9.93	Moderately Unstable	
.70	.56	.33	.37	.70	.23	.37	.28	.23	.37	.66	.98	.70	.80	.51	.98	8.80	Slightly Unstable	
2.57	1.69	2.25	2.48	2.95	2.15	.98	1.03	.75	.98	2.29	2.29	1.45	1.78	1.83	1.59	29.07	Neutral	
1.40	1.40	1.40	1.26	4.12	2.15	1.31	.80	.80	2.57	3.04	1.22	1.40	1.17	1.69	.80	26.54	Slightly Stable	
.42	.33	.42	.05	.89	1.03	1.08	.84	1.59	1.78	2.43	1.50	.70	1.64	1.40	.23	16.34	Moderately Stable	
.00	.00	.05	.00	.00	.00	.05	.37	.61	.94	.98	.61	.28	.37	.37	.00	4.63	Extremely Stable	

Wind Direction by Wind Speed

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	-WIND SPEED CLASSES-	
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	C A L M	
.05	.14	.28	.19	.19	.00	.09	.05	.09	.09	.05	.05	.09	.05	.05	.00	1.45	0.8 - 3.5 mph	
.94	.84	1.36	.47	.47	.66	.75	.47	.56	.75	.84	.47	.51	.61	.70	.75	11.14	3.6 - 7.5 mph	
2.15	2.25	2.15	2.15	2.06	1.69	1.17	1.22	1.59	1.59	1.64	1.87	1.08	.89	.66	.98	25.14	7.6 - 12.5 mph	
1.36	1.78	1.36	1.40	4.45	2.01	.89	1.17	1.50	1.83	3.89	2.39	1.26	2.25	2.01	1.69	31.23	12.6 - 18.5 mph	
1.40	.37	.14	.84	1.59	1.36	.61	1.08	.66	2.90	3.79	2.34	1.69	1.73	1.64	.70	22.85	18.6 - 24.5 mph	
.00	.00	.00	.00	.09	.19	.28	.19	.89	1.54	2.20	.89	.19	.56	1.03	.14	8.19	> 24.5 mph	

CECO LASALLE STATION
375 ft. WIND SPEED and WIND DIRECTION

October-December 1991
375-33 ft. DIFFERENTIAL TEMPERATURE

SPEED CLASS	WIND DIRECTION CLASSES																STABILITY CLASSES								TOTAL
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	EU	MU	SU	N	SS	MS	ES	
EU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00	.05	.05							
1 MU	.00	.00	.05	.00	.00	.00	.00	.00	.00	.19	.10	.05	.05	.00	.00	.00	.43		.43						
9 SU	.14	.00	.00	.00	.00	.00	.00	.05	.10	.19	.19	.00	.05	.14	.05	.14	1.06			1.06					
- N	1.16	.39	.29	1.45	.48	.10	.05	.58	.43	.58	.72	.10	.72	1.01	.48	.63	9.17				9.17				
2 SS	.24	.14	.00	.05	.05	.05	.14	.39	.43	.29	.34	.29	.72	1.50	.24	.63	5.50					5.50			
4 MS	.05	.05	.00	.00	.00	.05	.05	.29	.14	.68	.48	.53	.10	.53	.19	.00	3.14						3.14		
ES	.00	.00	.00	.00	.00	.00	.00	.00	.05	.24	.05	.00	.05	.00	.00	.00	.39							.39	
																									19.73

EU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00							
G MU	.00	.00	.00	.00	.00	.00	.00	.00	.10	.29	.14	.05	.10	.00	.00	.00	.68		.68						
T SU	.00	.00	.00	.00	.00	.00	.00	.00	.24	.14	.05	.05	.29	.05	.10	.00	.92			.92					
N	.24	.00	.00	.05	.53	1.21	.34	.53	1.40	2.36	.68	1.64	3.42	3.14	.39	.29	16.21				16.21				
2 SS	.05	.10	.00	.00	.10	.68	.53	.77	2.60	4.25	1.88	.05	.63	.19	.19	.00	12.01					12.01			
4 MS	.00	.00	.00	.00	.00	.00	.00	.14	.34	2.12	1.45	.24	.19	.10	.05	.00	4.63						4.63		
ES	.00	.00	.00	.00	.00	.00	.00	.00	.34	.24	.00	.00	.00	.00	.00	.00	.58							.58	
																									35.02

TOT	5.89	4.15	4.44	4.82	2.07	2.80	4.00	5.16	8.15	14.09	9.21	4.92	10.08	9.26	5.60	5.35	100.00	.10	2.65	4.44	51.28	27.21	12.16	2.17	100.00
-----	------	------	------	------	------	------	------	------	------	-------	------	------	-------	------	------	------	--------	-----	------	------	-------	-------	-------	------	--------

Wind Direction by Stability

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	-STABILITY CLASSES-
.00	.00	.05	.00	.00	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00	.10	Extremely Unstable
.19	.10	.14	.00	.00	.00	.00	.19	.29	.63	.58	.14	.24	.05	.00	.10	2.65	Moderately Unstable
.43	.34	.05	.00	.00	.00	.05	.24	.53	.39	.48	.19	.82	.53	.24	.14	4.44	Slightly Unstable
4.05	2.85	3.33	3.81	1.59	1.64	2.36	2.12	2.36	3.57	2.36	2.80	6.17	5.69	3.38	3.18	51.28	Neutral
.96	.68	.82	.77	.43	1.01	1.16	1.69	3.52	5.16	3.14	.63	2.12	2.17	1.35	1.59	27.21	Slightly Stable
.24	.19	.05	.24	.05	.14	.43	.87	1.06	3.28	2.22	1.11	.63	.82	.48	.34	12.16	Moderately Stable
.00	.00	.00	.00	.00	.00	.00	.05	.39	1.01	.43	.05	.10	.00	.14	.00	2.17	Extremely Stable

Wind Direction by Wind Speed

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	-WIND SPEED CLASSES-
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	C A L M
.10	.10	.05	.19	.05	.00	.05	.05	.00	.05	.05	.10	.00	.10	.00	.05	.92	0.8 - 3.5 mph
.14	.34	.53	.29	.14	.14	.53	.39	.53	.24	.29	.24	.48	.29	.53	.63	5.74	3.6 - 7.5 mph
1.01	1.21	1.74	.43	.24	.39	1.50	.53	.29	.68	.82	.29	1.06	.82	1.59	1.06	13.65	7.6 - 12.5 mph
2.75	1.83	1.78	2.36	.48	.19	.82	1.45	1.50	1.40	1.74	1.30	2.22	1.40	1.78	1.93	24.94	12.6 - 18.5 mph
1.59	.58	.34	1.50	.53	.19	.24	1.30	1.16	2.22	1.88	.96	1.69	3.18	.96	1.40	19.73	18.6 - 24.5 mph
.29	.10	.00	.05	.63	1.88	.87	1.45	4.68	9.50	4.44	2.03	4.63	3.47	.72	.29	35.02	> 24.5 mph

CECo LASALLE STATION
375 ft. WIND SPEED and WIND DIRECTION

October-December 1991
375-33 ft. DIFFERENTIAL TEMPERATURE

NUMBER OF OBSERVATIONS = 2073
VALUES ARE PERCENT OCCURRENCE

SPEED CLASS	WIND DIRECTION CLASSES																TOTAL	STABILITY CLASSES								TOTAL
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		EU	MU	SU	N	SS	MS	ES		
EU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00								
MU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00							
C SU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00						
A N	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00						
L SS	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00					
M MS	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
ES	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
.00																										
EU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00							
MU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00	.05	.05								
1 SU	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.05	.05							
- N	.00	.05	.05	.05	.05	.00	.05	.05	.00	.05	.00	.10	.00	.05	.00	.05	.53			.53						
3 SS	.00	.05	.00	.10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00	.19			.19						
MS	.05	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.10			.10						
ES	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				.00					
.92																										
EU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00							
MU	.00	.00	.00	.00	.00	.00	.00	.05	.05	.10	.05	.05	.05	.00	.00	.00	.34	.34								
4 SU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.10	.00	.00	.14			.14						
- N	.00	.10	.19	.05	.10	.05	.48	.19	.24	.05	.19	.14	.24	.14	.34	.29	2.80			2.80						
7 SS	.10	.14	.34	.10	.00	.10	.00	.10	.10	.10	.00	.00	.05	.05	.14	.19	1.50			1.50						
MS	.05	.10	.00	.14	.05	.00	.05	.05	.14	.00	.00	.00	.10	.00	.05	.14	.87			.87						
ES	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.05	.00	.00	.00	.00	.10				.10					
5.74																										
EU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00							
MU	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.14	.00	.00	.00	.00	.00	.19	.19								
8 SU	.05	.14	.00	.00	.00	.00	.00	.00	.05	.05	.14	.00	.00	.00	.00	.00	.43			.43						
- N	.63	.92	1.45	.24	.05	.19	1.06	.24	.10	.24	.24	.05	.77	.68	1.40	.77	9.02			9.02						
1 SS	.34	.14	.29	.19	.19	.14	.24	.14	.05	.10	.24	.05	.29	.14	.19	.24	2.99			2.99						
2 MS	.00	.00	.00	.00	.00	.05	.19	.14	.10	.14	.05	.19	.00	.00	.00	.05	.92			.92						
ES	.00	.00	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00	.00	.10				.10					
13.65																										
EU	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.05								
1 MU	.19	.10	.10	.00	.00	.00	.00	.14	.14	.00	.10	.00	.05	.05	.00	.10	.96	.96								
3 SU	.19	.19	.05	.00	.00	.00	.05	.19	.14	.00	.10	.14	.43	.24	.10	.00	1.83			1.83						
- N	2.03	1.40	1.35	1.98	.39	.10	.39	.53	.19	.29	.53	.77	1.01	.68	.77	1.16	13.56			13.56						
1 SS	.24	.10	.19	.34	.10	.05	.24	.29	.34	.43	.68	.24	.43	.24	.58	.53	5.02			5.02						
8 MS	.10	.05	.05	.05	.00	.05	.14	.24	.34	.34	.24	.14	.24	.19	.19	.14	2.51			2.51						
ES	.00	.00	.00	.00	.00	.00	.00	.05	.34	.34	.10	.00	.05	.00	.14	.00	1.01				1.01					
24.94																										

24.94

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

DESCRIPTION OF EVENT

On October 29, 1991, at 1415 hours, with Unit 1 in Run mode at 100% power, and Unit 2 in Hot Shutdown, it was identified by the Station Technical Staff that a break in the lake blowdown line existed. The discovery was made while checking the placement of an instrument near the inlet point of the blowdown line. After a conference with the Technical Staff Work Planner to verify that the line's discharge valve was closed, the Shift Engineer was contacted to inform him of a possible blowdown line break. The engineer and work planner then conducted a walkdown of the blowdown line and located the break.

Based on available indication, water was passing out of the line break at a rate of about 50,000 gallons per minute. The location of the break was on the slope of a hill, and the water was flowing into a ravine, following a path to the Illinois River. The line was isolated as soon as the break location was identified.

From a review of the Blowdown Line Flow Recorder charts in the Control Room it was determined that the line break had existed for approximately a 12 hour period from 0215 hours to 1415 hours on October 29, 1991.

Excavation of the line revealed a large ruptured area approximately 3 to 4 feet across in the 54 inch line. It was also noted that portions of the adjacent makeup line were deteriorating and would need to be replaced. The repairs to both the makeup and blowdown lines were being completed under work request L11152.

APPARENT CAUSE OF EVENT

The apparent cause of the event is a design deficiency that has led to premature failure of the piping. The findings of an engineering investigation for a previous event provides the details of this design deficiency. Water hammer caused by closing of the Howell-Bunger valve at the discharge end of the blowdown line is a probable contributory cause.

The cause of water hammer due to hydraulic transients in the blowdown line has been previously investigated. It was determined that proper performance of the procedures for opening and closing the Howell-Bunger valve help to minimize hydraulic transients. In this event, the procedure to close the Howell-Bunger valve (LOP-WL-04, "Lake Level and Blowdown Flow Control") was followed, however, the line had apparently deteriorated to a point where it could no longer withstand expected hydraulic transients.

SAFETY ANALYSIS OF EVENT

An adequate supply of water was maintained at all times in the cooling pond to assure safe operation and shutdown of both Unit 1 and Unit 2 reactors.

CORRECTIVE ACTIONS

The repairs to the lake makeup and blowdown lines were completed under work request L11152. The makeup line was inspected from the interior of the pipe by the System Engineer and a Mechanical Maintenance Foreman for a distance of about 400 feet. Further inspection was barred by the presence of water in lower lying sections of the pipeline. No indications of damage were found. The blowdown line will be similarly inspected when accessible, and damaged sections will be replaced under the same work request. Action Item Record (AIR) 373-200-91-12801 tracked completion of this work.

Because the pipelines are installed underground and follow the general contour of the ground, there is water in all the low-lying sections of the lines, making it impractical to inspect other sections of pipe for signs of deterioration.

The Engineering and Construction Department has been requested to recommend further action regarding the options for minimizing reoccurrences of makeup and blowdown line failures. Feasibility of preventive maintenance will be addressed. AIR 373-200-91-12802 will track completion of this investigation.

The repairs to the lake makeup and blowdown lines was completed on 12/30/91. During the time of the repairs the River Discharge - Blowdown Pipe Flow Rate Measurement Device was considered inoperable, and a thirty day Technical Specification timeclock was in affect. The repairs exceeded thirty days which resulted in exceeding the timeclock which required including the event in the next semiannual Radioactive Effluent Release Event.