

Exelon Nuclear  
Limerick Generating Station  
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Nuclear

TS 6.9.1.8  
10CFR50.36(a)

April 9, 2001  
Docket Nos. 50-352  
50 353  
License Nos. NPF-39  
NPF-85

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Subject: Limerick Generating Station, Units 1 and 2

- 1) Annual Effluent Release Report No. 26,  
January 1, 2000 through December 31, 2000.
- 2) Annual Tower No. 1 Joint Frequency Distributions  
of Wind Direction and Speed by Atmosphere Stability  
Report No. 16 for 2000.

Gentlemen:

Enclosed is the Annual Radiological Effluent Release Report No. 26, for Limerick Generating Station (LGS), Units 1 and 2, for the period January 1, 2000 to December 31, 2000.

In addition, the Annual Tower No. 1 Joint Frequency Distributions of Wind Direction and Speed by Atmospheric Stability Class Report No. 16 is enclosed. This report provides meteorological data for LGS for the calendar year 2000.

These reports are being submitted in accordance with the LGS Technical Specification Section 6.9.1.8 and 10CFR50.36(a).

Very truly yours,

  
R. C. Braun,  
Plant Manager

Enclosures (2)

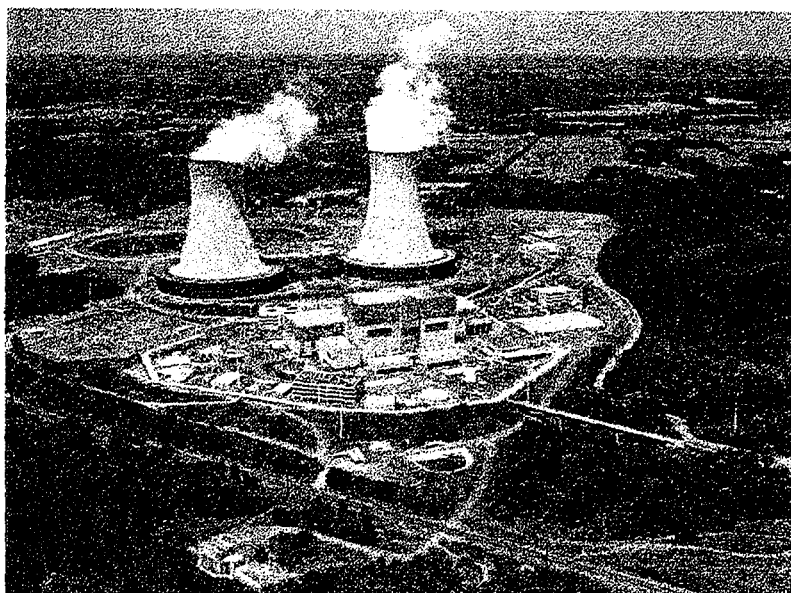
cc: H. J. Miller, Administrator, Region I, USNRC  
A. L. Burritt, USNRC Senior Resident Inspector, LGS  
D. E. Ney, Dept. of Environmental Resources  
L. Weinstock, Environmental Protection Agency  
INPO Records Center  
Director, Bureau of Radiation Protection  
P. D. Krippner, American Nuclear Insurers  
Document Control Desk, USNRC

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Annual Radioactive Effluent Release Report

2000

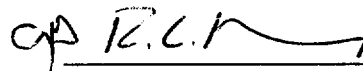
Limerick Generating Station

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT  
NO. 26  
January 1, 2000 Through December 31, 2000

EXELON NUCLEAR  
LIMERICK GENERATING STATION  
UNITS NO. 1 AND 2

DOCKET NO. 50-352 (Unit 1)  
DOCKET NO. 50-353 (Unit 2)

Submitted to  
The United States Nuclear Regulatory Commission  
Pursuant to  
Facility Operating License NPF-39 (Unit 1)  
and NPF-85 (Unit 2)

A handwritten signature in dark ink, appearing to read 'R.C. Braun', is written over a horizontal line.

R. C. Braun, Plant Manager

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## I. INTRODUCTION

This submittal complies with the format described in Regulatory Guide 1.21, "Measuring, Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water Cooled Nuclear Power Plants", Revision 1, June, 1974.

The following information is included as Tables to this report:

- A summary of the gaseous and liquid effluent releases for the report period. Where "0.00E+00" is used, it denotes that no activity was found for analyzed nuclides. All gamma nuclides and only the non-gamma nuclides listed in the ODCM are analyzed. All nuclides were analyzed to the LLD specified in the ODCM. The estimated total errors stated in the gaseous and liquid summation of releases were the values quoted in past reports. The reported Noble Gas activities for gaseous releases are higher than actual Noble Gas releases due to a very high natural background of radon. The radon levels can vary by a wide margin from day to day and most likely contribute to the majority of the noble gas monitor response.
- Composite particulate air samples and liquid radwaste composites, counted for beta emitters (e.g. Fe-55, Sr-89, Sr-90) and gross alpha (air samples only), were submitted to an offsite vendor laboratory for analysis. Other required analyses were performed onsite. All vendor results were received and are included in the report calculations. Therefore the 2000 report is complete.
- A summary of solid waste dispositioned during the report period, to include: total activity shipped by waste type and; the estimated composition of each type of waste by isotope; the number of shipments, mode of transportation, destination, type of container, total container volume, and solidification agent.

### Additional Information:

- There were no changes to Radioactive Waste Treatment Systems during the report period.
- The Activities and Doses listed in this report are within the limits required by 40CFR Part 190.

## II. TABLES

### A. SUMMARY OF RADIOACTIVE GASEOUS EFFLUENTS

January 1, 2000 to December 31, 2000  
(13 pages of Tables)

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
 DATE: 03/01/2001 10:45:20 AM  
 GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4
A. FISSION AND ACTIVATION GASSES (estimated total error: 45.3 %)					
1. Total Release	Ci	3.37E+02	4.27E+02	3.95E+02	3.38E+02
2. Average Release Rate for Period	uCi/sec	4.27E+01	5.28E+01	5.01E+01	4.25E+01
B. IODINES (estimated total error: 45.3 %)					
1. Total I-131	Ci	0.00E+00	4.60E-05	0.00E+00	0.00E+00
2. Average Release Rate for Period	uCi/sec	0.00E+00	5.68E-06	0.00E+00	0.00E+00
C. PARTICULATES (estimated total error: 45.3 %)					
1. Particulates with T 1/2 > 8 days	Ci	1.74E-05	2.88E-07	0.00E+00	0.00E+00
2. Average Release Rate for Period	uCi/sec	2.21E-06	3.56E-08	0.00E+00	0.00E+00
3. Gross Alpha	Ci	1.83E-06	1.71E-07	0.00E+00	0.00E+00
D. TRITIUM (estimated total error: 45.3 %)					
1. Total Release	Ci	2.46E+00	3.26E+00	5.90E+00	4.27E+00
2. Average Release	uCi/sec	3.12E-01	4.03E-01	7.49E-01	5.36E-01

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
 DATE: 03/01/2001 10:45:20 AM  
 GASEOUS EFFLUENTS FOR RELEASE POINT - NORTH STACK

Nuclide Released	Units	Qtr 1	Continuous Mode			
			Qtr 2	Qtr 3	Qtr 4	
1. FISSION AND ACTIVATION GASSES						
AR-41	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-83M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-85	Ci	9.26E+00	1.18E+01	1.18E+01	1.16E+01	1.16E+01
KR-85M	Ci	2.45E+00	3.12E+00	3.13E+00	3.07E+00	3.07E+00
KR-87	Ci	4.29E+00	5.47E+00	5.48E+00	5.38E+00	5.38E+00
KR-88	Ci	7.59E+00	9.67E+00	9.69E+00	9.52E+00	9.52E+00
KR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-131M	Ci	2.32E-01	2.96E-01	2.96E-01	2.91E-01	2.91E-01
XE-133	Ci	8.63E-01	1.10E+00	1.10E+00	1.08E+00	1.08E+00
XE-133M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-135	Ci	3.38E+01	4.31E+01	4.32E+01	4.24E+01	4.24E+01
XE-135M	Ci	2.15E+01	2.75E+01	2.75E+01	2.70E+01	2.70E+01
XE-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-138	Ci	4.62E+01	5.85E+01	5.85E+01	5.79E+01	5.79E+01
TOTAL FOR PERIOD (ABOVE)	Ci	1.26E+02	1.61E+02	1.61E+02	1.58E+02	1.58E+02

## 2. IODINES

I-130	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-131	Ci	0.00E+00	4.60E-05	0.00E+00	0.00E+00
I-132	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-135	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD (ABOVE)	Ci	0.00E+00	4.60E-05	0.00E+00	0.00E+00



SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
EFFLUENT REPORT - 2000  
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GASEOUS EFFLUENTS FOR RELEASE POINT - NORTH STACK

Nuclide Released	Units	Continuous Mode			
		Qtr 1	Qtr 2	Qtr 3	Qtr 4
3. PARTICULATES (T 1/2 > 8 DAYS)					
C-14	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
P-32	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CR-51	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MN-54	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-55	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-59	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NI-63	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-65	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	Ci	2.53E-06	2.29E-07	0.00E+00	0.00E+00
SR-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-91	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZR-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NB-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-106	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AG-110M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-127M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-129M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-136	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-140	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-141	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-144	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR-143	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD (ABOVE)		Ci	2.53E-06	2.29E-07	0.00E+00
					0.00E+00

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
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 GASEOUS EFFLUENTS FOR RELEASE POINT - UNIT 1 SOUTH STACK

Nuclide Released	Units	Qtr 1	Continuous Mode		Qtr 4
			Qtr 2	Qtr 3	
1. FISSION AND ACTIVATION GASSES					
AR-41	Ci	8.43E+00	1.06E+01	1.05E+01	7.12E+00
KR-83M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-85	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-85M	Ci	2.02E+00	2.54E+00	2.52E+00	1.71E+00
KR-87	Ci	2.02E+00	2.54E+00	2.52E+00	1.71E+00
KR-88	Ci	2.02E+00	2.54E+00	2.52E+00	1.71E+00
KR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-131M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-133	Ci	4.38E+01	5.50E+01	5.45E+01	3.70E+01
XE-133M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-135	Ci	2.29E+01	2.87E+01	2.85E+01	1.93E+01
XE-135M	Ci	3.10E+01	3.89E+01	3.86E+01	2.62E+01
XE-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-138	Ci	4.72E+00	5.93E+00	5.88E+00	3.99E+00
TOTAL FOR PERIOD (ABOVE)	Ci	1.17E+02	1.47E+02	1.46E+02	9.87E+01

## 2. IODINES

I-130	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-131	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-132	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-135	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD (ABOVE)	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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 GASEOUS EFFLUENTS FOR RELEASE POINT - UNIT 1 SOUTH STACK

Nuclide Released	Units	Continuous Mode			
		Qtr 1	Qtr 2	Qtr 3	Qtr 4
3. PARTICULATES (T 1/2 > 8 DAYS)					
C-14	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
P-32	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CR-51	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MN-54	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-55	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-59	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NI-63	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-65	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-91	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZR-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NB-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-106	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AG-110M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-127M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-129M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-136	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-140	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-141	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-144	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR-143	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD (ABOVE)	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
 DATE: 03/01/2001 10:45:20 AM  
 GASEOUS EFFLUENTS FOR RELEASE POINT - UNIT 2 SOUTH STACK

Nuclide Released	Units	Qtr 1	Continuous Mode			Qtr 4
			Qtr 2	Qtr 3		
1. FISSION AND ACTIVATION GASSES						
AR-41	Ci	6.76E+00	8.63E+00	6.39E+00	5.85E+00	
KR-83M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
KR-85	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
KR-85M	Ci	1.62E+00	2.07E+00	1.53E+00	1.40E+00	
KR-87	Ci	1.62E+00	2.07E+00	1.53E+00	1.40E+00	
KR-88	Ci	1.62E+00	2.07E+00	1.53E+00	1.40E+00	
KR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
KR-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
XE-131M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
XE-133	Ci	3.51E+01	4.48E+01	3.32E+01	3.04E+01	
XE-133M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
XE-135	Ci	1.84E+01	2.34E+01	1.74E+01	1.59E+01	
XE-135M	Ci	2.49E+01	3.17E+01	2.35E+01	2.15E+01	
XE-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
XE-138	Ci	3.78E+00	4.83E+00	3.58E+00	3.27E+00	
TOTAL FOR PERIOD (ABOVE)	Ci	9.37E+01	1.20E+02	8.86E+01	8.11E+01	

## 2. IODINES

I-130	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-131	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-132	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-135	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD (ABOVE)	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
 DATE: 03/01/2001 10:45:20 AM  
 GASEOUS EFFLUENTS FOR RELEASE POINT - UNIT 2 SOUTH STACK

Nuclide Released	Units	Qtr 1	Continuous Mode			Qtr 4
			Qtr 2	Qtr 3		
3. PARTICULATES (T 1/2 > 8 DAYS)						
C-14	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
P-32	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CR-51	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MN-54	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-55	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-59	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NI-63	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-65	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-91	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZR-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NB-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-106	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AG-110M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-127M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-129M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-136	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-140	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-141	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-144	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR-143	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD (ABOVE)	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
 DATE: 03/01/2001 10:45:20 AM  
 GASEOUS EFFLUENTS FOR RELEASE POINT - HOT MAINTENANCE SHOP

Nuclide Released	Units	Continuous Mode		
		Qtr 1	Qtr 2	Qtr 3
1. FISSION AND ACTIVATION GASSES				
AR-41	Ci	0.00E+00	0.00E+00	0.00E+00
KR-83M	Ci	0.00E+00	0.00E+00	0.00E+00
KR-85	Ci	0.00E+00	0.00E+00	0.00E+00
KR-85M	Ci	0.00E+00	0.00E+00	0.00E+00
KR-87	Ci	0.00E+00	0.00E+00	0.00E+00
KR-88	Ci	0.00E+00	0.00E+00	0.00E+00
KR-89	Ci	0.00E+00	0.00E+00	0.00E+00
KR-90	Ci	0.00E+00	0.00E+00	0.00E+00
XE-131M	Ci	0.00E+00	0.00E+00	0.00E+00
XE-133	Ci	0.00E+00	0.00E+00	0.00E+00
XE-133M	Ci	0.00E+00	0.00E+00	0.00E+00
XE-135	Ci	0.00E+00	0.00E+00	0.00E+00
XE-135M	Ci	0.00E+00	0.00E+00	0.00E+00
XE-137	Ci	0.00E+00	0.00E+00	0.00E+00
XE-138	Ci	0.00E+00	0.00E+00	0.00E+00

TOTAL FOR PERIOD      Ci      0.00E+00      0.00E+00      0.00E+00  
 (ABOVE)

## 2. IODINES

I-130	Ci	0.00E+00	0.00E+00	0.00E+00
I-131	Ci	0.00E+00	0.00E+00	0.00E+00
I-132	Ci	0.00E+00	0.00E+00	0.00E+00
I-133	Ci	0.00E+00	0.00E+00	0.00E+00
I-134	Ci	0.00E+00	0.00E+00	0.00E+00
I-135	Ci	0.00E+00	0.00E+00	0.00E+00

TOTAL FOR PERIOD      Ci      0.00E+00      0.00E+00      0.00E+00  
 (ABOVE)

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
 DATE: 03/01/2001 10:45:20 AM  
 GASEOUS EFFLUENTS FOR RELEASE POINT - HOT MAINTENANCE SHOP

Nuclide Released	Units	Continuous Mode			
		Qtr 1	Qtr 2	Qtr 3	Qtr 4
3. PARTICULATES (T 1/2 > 8 DAYS)					
C-14	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
P-32	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CR-51	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MN-54	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-55	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-59	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NI-63	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-65	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-91	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZR-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NB-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-106	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AG-110M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-127M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-129M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-136	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-140	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-141	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-144	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR-143	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD		Ci	0.00E+00	0.00E+00	0.00E+00
(ABOVE)					

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
 DATE: 03/01/2001 10:45:20 AM  
 GASEOUS EFFLUENTS FOR RELEASE POINT - OIL INCINERATION

Nuclide Released	Units	Batch Mode		
		Qtr 1	Qtr 2	Qtr 3
1. FISSION AND ACTIVATION GASSES				
AR-41	Ci	0.00E+00	0.00E+00	0.00E+00
KR-83M	Ci	0.00E+00	0.00E+00	0.00E+00
KR-85	Ci	0.00E+00	0.00E+00	0.00E+00
KR-85M	Ci	0.00E+00	0.00E+00	0.00E+00
KR-87	Ci	0.00E+00	0.00E+00	0.00E+00
KR-88	Ci	0.00E+00	0.00E+00	0.00E+00
KR-89	Ci	0.00E+00	0.00E+00	0.00E+00
KR-90	Ci	0.00E+00	0.00E+00	0.00E+00
XE-131M	Ci	0.00E+00	0.00E+00	0.00E+00
XE-133	Ci	0.00E+00	0.00E+00	0.00E+00
XE-133M	Ci	0.00E+00	0.00E+00	0.00E+00
XE-135	Ci	0.00E+00	0.00E+00	0.00E+00
XE-135M	Ci	0.00E+00	0.00E+00	0.00E+00
XE-137	Ci	0.00E+00	0.00E+00	0.00E+00
XE-138	Ci	0.00E+00	0.00E+00	0.00E+00

TOTAL FOR PERIOD	Ci	0.00E+00	0.00E+00	0.00E+00
(ABOVE)				

2. IODINES

I-130	Ci	0.00E+00	0.00E+00	0.00E+00
I-131	Ci	0.00E+00	0.00E+00	0.00E+00
I-132	Ci	0.00E+00	0.00E+00	0.00E+00
I-133	Ci	0.00E+00	0.00E+00	0.00E+00
I-134	Ci	0.00E+00	0.00E+00	0.00E+00
I-135	Ci	0.00E+00	0.00E+00	0.00E+00

TOTAL FOR PERIOD	Ci	0.00E+00	0.00E+00	0.00E+00
(ABOVE)				



SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
EFFLUENT REPORT - 2000  
DATE: 03/01/2001 10:45:21 AM  
GASEOUS EFFLUENTS FOR RELEASE POINT - OIL INCINERATION

Nuclide Released	Units	Batch Mode			
		Qtr 1	Qtr 2	Qtr 3	Qtr 4
3. PARTICULATES (T 1/2 > 8 DAYS)					
C-14	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
P-32	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CR-51	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MN-54	Ci	2.47E-07	0.00E+00	0.00E+00	0.00E+00
FE-55	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-59	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	Ci	5.45E-06	0.00E+00	0.00E+00	0.00E+00
NI-63	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-65	Ci	8.88E-06	0.00E+00	0.00E+00	0.00E+00
RB-86	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-91	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZR-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NB-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-106	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AG-110M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-127M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-129M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-134	Ci	1.98E-08	0.00E+00	0.00E+00	0.00E+00
CS-136	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-137	Ci	2.34E-07	0.00E+00	0.00E+00	0.00E+00
BA-140	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-141	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-144	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR-143	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD					
(ABOVE)		Ci	1.48E-05	5.89E-08	0.00E+00
				0.00E+00	0.00E+00

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
 DATE: 03/01/2001 10:45:21 AM  
 GASEOUS EFFLUENTS FOR RELEASE POINT - OTHER BATCH RELEASES

Nuclide Released	Units	Batch Mode			
		Qtr 1	Qtr 2	Qtr 3	Qtr 4

1. FISSION AND ACTIVATION GASSES

AR-41	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-83M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-85	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-85M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-87	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-88	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-131M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-133M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-135	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-135M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-138	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TOTAL FOR PERIOD (ABOVE)	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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2. IODINES

I-130	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-131	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-132	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-135	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TOTAL FOR PERIOD (ABOVE)	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
 DATE: 03/01/2001 10:45:21 AM  
 GASEOUS EFFLUENTS FOR RELEASE POINT - OTHER BATCH RELEASES

Nuclide Released	Units	Qtr 1	Batch Mode		Qtr 4
			Qtr 2	Qtr 3	
3. PARTICULATES (T 1/2 > 8 DAYS)					
C-14	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
P-32	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CR-51	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MN-54	Ci	2.55E-08	0.00E+00	0.00E+00	0.00E+00
FE-55	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-59	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	Ci	1.36E-08	0.00E+00	0.00E+00	0.00E+00
NI-63	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-65	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-91	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZR-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NB-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-106	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AG-110M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-127M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-129M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-136	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-140	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-141	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-144	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR-143	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD					
(ABOVE)	Ci	3.91E-08	0.00E+00	0.00E+00	0.00E+00

## II. TABLES

### B. SUMMARY OF RADIOACTIVE LIQUID EFFLUENTS

January 1, 2000 to December 31, 2000  
(4 pages of Tables)

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
 DATE: 03/01/2001 11:31:07 AM  
 LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4
A. FISSION AND ACTIVATION PRODUCTS (estimated total error: 62.8 %)					
1. Total release (not including tritium, gasses, alpha)	Ci	2.23E-03	1.38E-02	4.25E-04	4.87E-04
2. Average diluted concentration during Period	uCi/ml	3.03E-08	1.70E-07	9.62E-09	5.95E-09
B. TRITIUM (estimated total error: 62.8 %)					
1. Total Release	Ci	9.67E+00	8.76E+00	4.48E+00	1.32E+01
2. Average diluted concentration during Period	uCi/ml	1.31E-04	1.08E-04	1.01E-04	1.61E-04
C. DISSOLVED AND ENTRAINED GASSES (estimated total error: 62.8 %)					
1. Total Release	Ci	6.42E-03	9.78E-04	7.73E-04	2.11E-03
2. Average diluted concentration during Period	uCi/ml	8.72E-08	1.20E-08	1.75E-08	2.58E-08
D. GROSS ALPHA RADIOACTIVITY (estimated total error: 62.8 %)					
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION) (est tot er: .0 %)					
1. Volume Released	Liters	2.17E+06	3.04E+06	1.46E+06	2.82E+06
F. VOLUME OF DILUTION WATER USED DURING PERIOD (est tot er: .0 %)					
1. Dilution Volume	Liters	7.14E+07	7.82E+07	4.27E+07	7.91E+07

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
 DATE: 03/01/2001 11:31:07 AM  
 LIQUID EFFLUENTS FOR RELEASE POINT - LIQUID RADWASTE DISCHARGE TO  
 SCHULYKILL RIVER

Nuclide Released	Units	Batch Mode			
		Qtr 1	Qtr 2	Qtr 3	Qtr 4
AG-110M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-139	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-140	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-141	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-142	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C-14	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-141	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-143	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-144	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	Ci	4.03E-06	2.37E-04	0.00E+00	0.00E+00
CO-60	Ci	7.67E-04	4.86E-03	2.94E-04	4.34E-04
CR-51	Ci	6.18E-04	1.19E-03	0.00E+00	0.00E+00
CS-134	Ci	0.00E+00	2.61E-06	0.00E+00	0.00E+00
CS-136	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-137	Ci	0.00E+00	2.72E-04	1.07E-04	0.00E+00
CS-138	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CU-64	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-55	Ci	0.00E+00	3.96E-03	0.00E+00	0.00E+00
FE-59	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
H-3	Ci	9.67E+00	8.76E+00	4.48E+00	1.32E+01
I-130	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-131	Ci	9.89E-06	0.00E+00	0.00E+00	0.00E+00
I-132	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	Ci	6.69E-06	0.00E+00	0.00E+00	0.00E+00
I-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-135	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-142	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MN-54	Ci	3.85E-05	1.09E-03	0.00E+00	6.51E-06
MN-56	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NA-24	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NB-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NI-63	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
 DATE: 03/01/2001 11:31:07 AM  
 LIQUID EFFLUENTS FOR RELEASE POINT - LIQUID RADWASTE DISCHARGE TO  
 SCHULYKILL RIVER

Nuclide Released	Units	Batch Mode			
		Qtr 1	Qtr 2	Qtr 3	Qtr 4
NI-65	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NP-239	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
P-32	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR-143	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR-144	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-88	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-105	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-106	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-91	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-92	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TC-101	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TC-99M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-127M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-127	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-129M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-129	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-131M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-131	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-132	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
W-187	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-91M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-91	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-92	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-93	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-65	Ci	7.84E-04	2.17E-03	2.40E-05	4.64E-05
ZN-69	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZR-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZR-97	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total For Above	Ci	9.67E+00	8.77E+00	4.48E+00	1.32E+01

SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
 DATE: 03/01/2001 11:31:07 AM  
 LIQUID EFFLUENTS FOR RELEASE POINT - LIQUID RADWASTE DISCHARGE TO  
 SCHULYKILL RIVER

Nuclide Released	Units	Qtr 1	Qtr 2	Batch Mode	
				Qtr 3	Qtr 4
AR-41	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-83M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-85	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-85M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-87	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-88	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-131M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-133	Ci	3.28E-03	3.42E-04	1.27E-04	7.43E-04
XE-133M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-135	Ci	3.14E-03	6.35E-04	6.46E-04	1.37E-03
XE-135M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-138	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total For Above	Ci	6.42E-03	9.78E-04	7.73E-04	2.11E-03



II. TABLES

C. SOLID WASTE DISPOSITION REPORT

January 1, 2000 to December 31, 2000  
(7 pages of Tables)

A. Solid waste shipped offsite for burial or disposal (not irradiated fuel) 1/1/00 – 12/31/00

1.	Type of waste	Unit	12 Month Period	Estimated Error %
a.	Spent resin, filters, sludges, evaporator bottoms, etc.	m(3) Ci	18.45 2.72E+02	25%
b.	Dry compressible waste, contaminated equipment, etc.	m(3) Ci	51.63 2.61E+00	25%
c.	Irradiated components, control rods, etc.	m(3) Ci	9.67 1.63E+05	25%
d.	Other (Describe)	None	None	

## Category A – Spent Resin, Filters, Sludges, Evaporator Bottoms, etc.

Isotope	Waste Class A Curies	Percent Abundance	Waste Class C	Percent Abundance Curies
H-3	5.53E-01	0.28%	2.58E-04	0.00%
C-14	4.09E+00	2.10%	3.32E-05	0.00%
Cr-51	5.26E+00	2.71%	1.26E+01	16.24%
Mn-54	1.58E+01	8.13%	7.99E+00	10.30%
Fe-55	1.90E+00	0.98%	2.81E+00	3.62%
Co-58	1.48E+00	0.76%	2.59E+00	3.34%
Fe-59	1.36E-01	0.07%	1.06E+00	1.37%
Ni-59	1.05E+00	0.54%	0.00E+00	0.00%
Co-60	5.86E+01	30.15%	1.97E+01	25.40%
Ni-63	5.66E+00	2.91%	5.05E-01	0.65%
Zn-65	9.28E+01	47.75%	2.99E+01	38.55%
Sr-90	1.99E-01	0.10%	0.00E+00	0.00%
Tc-99	6.09E-03	0.00%	3.33E-05	0.00%
I-129	6.32E-04	0.00%	3.33E-05	0.00%
Cs-134	2.86E-01	0.15%	1.09E-01	0.14%
Cs-137	6.33E+00	3.26%	1.70E-01	0.22%
Ce-144	1.73E-01	0.09%	1.26E-01	0.16%
Pu-238	8.72E-04	0.00%	0.00E+00	0.00%
Pu-239/40	1.07E-04	0.00%	0.00E+00	0.00%
Pu-241	5.19E-03	0.00%	0.00E+00	0.00%
Am-241	2.87E-03	0.00%	2.37E-03	0.00%
Cm-242	9.47E-04	0.00%	6.26E-03	0.01%
Cm-243/44	1.09E-03	0.00%	0.00E+00	0.00%
TOTALS	1.94E+02	100.00%	7.76E+01	100.00%

Activity is estimated

## Category B – Dry Compressible Waste, Contaminated Equipment, etc.

Isotope	Waste Class A Curies	Percent Abundance
H-3	1.02E-02	0.39%
C-14	3.29E-04	0.01%
Cr-51	2.23E-01	8.54%
Mn-54	1.63E-01	6.28%
Fe-55	8.01E-02	3.07%
Co-58	4.69E-01	17.97%
Ni-59	7.76E-05	0.00%
Co-60	6.87E-01	26.32%
Ni-63	5.74E-02	2.20%
Zn-65	7.89E-01	30.23%
Sr-90	2.27E-05	0.00%
Tc-99	6.04E-05	0.00%
Cs-134	7.29E-03	0.28%
Cs-137	3.59E-02	1.38%
Ce-144	4.65E-03	0.18%
Pu-238	1.00E-07	0.00%
Cm-242	6.16E-05	0.00%
Co-57	9.70E-04	0.04%
Nb-95	5.82E-02	2.23%
Zr-95	2.31E-02	0.88%
TOTALS	2.61E+00	100.00%

Activity is estimated

## Category C – Irradiated Components, Control Rods, Etc.

Isotope	Waste Class C Curies	Percent Abundance
H-3	3.97E-01	0.00%
C-14	4.97E+00	0.00%
Cr-51	6.94E+02	0.43%
Mn-54	1.05E+03	0.64%
Fe-55	7.23E+04	44.30%
Ni-59	1.87E+01	0.01%
Co-60	8.45E+04	51.78%
Ni-63	3.40E+03	2.08%
Zr-95	6.20E+01	0.04%
Tc-99	1.85E-02	0.00%
Sb-125	1.17E+03	0.72%
Pu-238	1.21E-02	0.00%
PU-239/40	2.02E-05	0.00%
Pu-241	3.07E-03	0.00%
Am-241	1.24E+00	0.00%
Cm-242	8.46E-04	0.00%
Cm-243/44	2.55E-04	0.00%
Nb-95	1.06E-01	0.00%
U-235	6.07E-07	0.00%
Np-237	9.85E-07	0.00%
Pu-242	1.67E-06	0.00%
Am-243	4.32E-07	0.00%
TOTALS	1.63E+05	100.00%

Activity is estimated

Category A - 21 shipments Type A LSA  
Category A - 2 shipments > Type A LSA  
Category A - 1 shipment Type B  
Category B - 56 shipments Type A LSA  
Category C - 2 shipments Type B  
Category C - 4 shipments Highway Route Control  
Category D - No Shipments Made

Solid Waste (Disposition)

<u>Number of Shipments Made</u>	<u>Mode of Transportation</u>	<u>Destination</u>
14	Truck	Studsvik (THOR) to Barnwell
21	Truck	Duratek to Envirocare
8	Truck	Allied Technology Group (QCEP) to Barnwell
15	Truck	Allied Technology Group (DAW) to Barnwell
1	Truck	US Ecology to Barnwell
16	Truck	US Ecology to Envirocare
3	Truck	Manufacturing Sciences Corp. to Envirocare
8	Truck	Limerick Generating Station to Barnwell

Comments:

5 Shipments were made from Limerick to Duratek for processing  
 6 Shipments were made from Limerick to US Ecology for processing  
 3 Shipments were made from Limerick to Allied Technology Group (QCEP) for processing  
 3 Shipments were made from Limerick to Allied Technology Group (DAW) for processing  
 7 Shipments were made from Limerick to Studsvik (THOR) for processing  
 No solidifications were performed

Major Changes to Plant Radwaste Systems

There were no major changes to plant Radwaste Systems.

Changes to procedure RW-C-100, "Solid Radwaste System Process Control Program (PCP)"

There were no revisions to procedure RW-C-100, "Solid Radwaste System Process Control Program (PCP)"



## II. TABLES

### D. OFFSITE RADIATION DOSE ASSESSMENT

January 1, 2000 to December 31, 2000  
(1 page of Table)

LIMERICK GENERATING STATION - Units 1 & 2

SUMMARY OF MAXIMUM INDIVIDUAL DOSES FOR PERIOD:  
01/01/00 0:00 TO 12/31/00 23:59

EFFLUENT	APPLICABLE ORGAN	ESTIMATED DOSE (MREM)	AGE GROUP	LOCATION DIST (M)	DIR (TOWARD)	% OF APPLICABLE LIMIT	LIMIT (MREM)
LIQUID	TOTAL BODY	5.09E-03	ADULT	RECEPTOR 1		8.48E-02	6.0
LIQUID	LIVER	7.02E-03	TEEN	RECEPTOR 1		3.51E-02	20.0
NOBLE GAS	AIR DOSE (GAMMA-MRAD)	4.67E-01	ALL	762.	ESE	2.34E+00	20.0
NOBLE GAS	AIR DOSE (BETA-MRAD)	2.78E-01	ALL	762.	ESE	6.95E-01	40.0
NOBLE GAS	T.BODY (GAMMA)	3.07E-01	ALL	762.	ESE	1.54E+00	20.0
NOBLE GAS	SKIN (BETA)	5.77E-01	ALL	762.	ESE	1.44E+00	40.0
IODINE, PARTICULATE +TRITIUM DOSE (1)	SKIN	5.77E-01	INFANT	805.	ESE	1.92E-01	30.0

(1) includes Plume Dose

## II. TABLES

### E. RADIATION DOSES TO MEMBERS OF THE PUBLIC DUE TO THEIR ACTIVITIES INSIDE SITE BOUNDARY

January 1, 2000 to December 31, 2000  
(2 pages of Tables)

RADIATION DOSES TO MEMBERS OF THE PUBLIC DUE TO THEIR  
ACTIVITIES INSIDE SITE BOUNDARY

Per ODCM Control 3.6, the Annual Effluent Release Report shall include an assessment of the radiation doses from radioactive liquid and gaseous effluents to members of the public due to their activities inside the Site Boundary during the report period. ODCM Controls state that Members of the Public shall include all persons not occupationally associated with the plant. This category does not include employees of the utility or contractors. Also excluded from this category are persons who enter the site to service equipment or to make deliveries. This category does include persons who use portions of the site for recreational, occupational education, or other purposes not associated with the plant. The Limerick Information Center on Longview Road near the rear exit of the plant, Frick's Lock on the west shore of the river and the railroad tracks which run above the east shore of the Schuylkill River are all areas within the site boundary where radiation dose of this type could occur. The radiation doses to Members of the Public have been estimated using methodology stated in the ODCM. The maximum gaseous dose to members of the public at these locations is based on the following assumptions:

1. Yearly average meteorology and actual effluent releases.
2. Beta air dose attributed to noble gas releases.
3. Highest exposed sector of the railroad tracks (W), and the sectors enclosing Frick's Lock and the Information Center available for occupancy.
4. The maximum expected occupancy factor is 25% of a working year in all locations.
5. Distance to the railroad tracks, which pass through the Site Boundary in the W sector, is approximately 225 meters.
6. Distance to the Limerick Information Center is approximately 884 meters in the ESE sector.
7. Distance to Frick's Lock is approximately 450 meters in the WSW sector.

A summary of gaseous radiation doses to members of the public at these locations is included in this Attachment.

RADIATION DOSE TO MEMBERS OF THE PUBLIC WITHIN LIMERICK GENERATING  
STATION SITE BOUNDARY FOR AFFECTED SECTORS AND DISTANCES

LOCATION	SECTOR	APPROX. DISTANCE (METERS)	GAMMA AIR DOSE, MRAD <sup>(1)</sup>	BETA AIR DOSE, MRAD <sup>(2)</sup>	IODINE/PART/H3 /PLUME ORGAN DOSE, MREM <sup>(3)</sup>	IODINE/PART/H3 /PLUME INGEST DOSE, MREM <sup>(4)</sup>
FRICK'S LOC	WSW	450	3.24E-02	1.93E-02	4.00E-02	7.84E-04
INFO. CENTE	ESE	884	9.35E-02	5.58E-02	1.16E-01	2.20E-03
R.R. TRACKS	W	225	1.20E-01	7.14E-02	1.48E-01	2.73E-03

Notes:

- (1)The limit for Gamma Air Dose = 20 mrad/y (ref. ODCM I3.3.3b)  
(2)The limit for Beta Air Dose = 40 mrad/y (ref. ODCM I3.3.3b)  
(3)The limit for Iodine/Particulate/H3 Organ Dose = 30 mrem/y (ref. ODCM I3.3.4b)  
(4)The limit for Iodine/Particulate/H3 Ingestion Dose = 30 mrem/y (ref. ODCM I3.3.4b)

### III. ATTACHMENTS

#### A. SUPPLEMENTAL INFORMATION

Facility: Limerick Generating Station - Units 1 and 2  
License : NPF-39 (Unit 1) and NPF-85 (Unit 2)

##### 1. Regulatory Limits (Technical Specification Limits)

###### A. Noble Gases:

1.  $\leq 500$  mRem/y - total body - "instantaneous" limits per  
 $\leq 3000$  mRem/y - skin ODCM Control 3.3.2
2.  $\leq 10$  mRad - air gamma - quarterly air dose limits  
 $\leq 20$  mRad - air beta per ODCM Control 3.3.3
3.  $\leq 20$  mRad - air gamma - yearly air dose limits pe  
 $\leq 40$  mRad - air beta ODCM Control 3.3.3

###### B. Iodines, tritium, particulates with half life > 8 days:

1.  $\leq 1500$  mRem/y - any organ - "instantaneous" limits per  
(inhalation ODCM Control 3.3.2  
path)
2.  $\leq 15$  mRem - any organ - quarterly dose limits per  
ODCM Control 3.3.4
3.  $\leq 30$  mRem - any organ - yearly dose limits per  
ODCM Control 3.3.4

###### C. Liquid Effluents:

1. Concentration  $\leq 10$ CFR20 - "instantaneous" limits per  
Appendix B, Table II, ODCM Control 3.2.2  
Col.2
2.  $\leq 3$  mRem - total body - quarterly dose limits per  
 $\leq 10$  mRem - any organ ODCM Control 3.2.3
3.  $\leq 6$  mRem - total body - yearly dose limits per  
 $\leq 20$  mRem - any organ ODCM Control 3.2.3

##### 2. Maximum Permissible Concentrations

Per LGS ODCM Control 3.2.2, MPCs are not used to calculate permissible release rates and concentrations for gaseous releases. The MPCs specified in 10CFR20, Appendix B, Table II, Column 2 for identified nuclides are used to calculate permissible release rates and concentrations for liquid releases.

### III. ATTACHMENTS (continued)

#### 3. Measurements and Approximations of Total Radioactivity

##### A. Fission and Activation Gases in Gaseous Effluents:

The method used for Gamma Isotopic Analysis is the Canberra Genie System with a gas Marinelli beaker. Noble gas releases are continuously monitored with the data stored on a computer system. The monitor data is analyzed to report noble gas effluent activities. When no activity is found in the Isotopic Analysis, the isotopic mixture is assumed to be that evaluated in the UFSAR (section 11.5, Table 11.5-4). If activity is found in the Isotopic Analysis, the isotopic mixture for the noble gas monitor is determined from the Isotopic Analysis.

##### B. Iodine in Gaseous Effluents:

The method used is the Canberra Genie System with a charcoal cartridge.

##### C. Particulate in Gaseous Effluents:

The method used is the Canberra Genie System with an air particulate sample, 47 mm filter.

##### D. Gamma Isotopic Analysis in Liquid Effluents:

The method used is the Canberra Genie System using a 1.0 liter Marinelli beaker. A Radwaste Liquid Discharge Pre-Release report is generated to ensure that the dose and activity to be released is within limits.

##### E. Tritium in Liquid and Gaseous Effluents:

Tritium in Liquid Effluents is analyzed using a Liquid Scintillation Counter.

Air from stack effluents is passed through two bubblers in series and an aliquot of the water from each bubbler analyzed using a Liquid Scintillation Counter.

III. ATTACHMENTS (continued)

4. Batch Liquid Releases Summary

January 2000 - December 2000  
(1 page of Table)



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SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
 DATE: 03/01/2001 11:31:07 AM  
 LIQUID EFFLUENTS FOR RELEASE POINT - LIQUID RADWASTE DISCHARGE TO  
 SCHULYKILL RIVER

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	Batch Mode			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Number of Batch Releases	3.60E+01	5.00E+01	2.40E+01	4.10E+01
Total time period for batch releases (min)	2.56E+03	3.56E+03	1.75E+03	3.35E+03
Maximum time period for batch release (min)	9.16E+01	9.56E+01	1.01E+02	1.04E+02
Average time period for batch release (min)	7.10E+01	7.12E+01	7.27E+01	8.16E+01
Minimum time period for batch release (min)	3.64E+01	3.10E+01	3.84E+01	4.45E+01
Average stream flow (Schuylkill River) during periods of release of effluents into a flowing stream (gpm)	1.79E+06	1.37E+06	5.25E+05	7.30E+05

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III. ATTACHMENTS (continued)

5. Batch Gaseous Release (January 2000 - December 2000):

(1 page of Table)

- Oil Incineration
- Other Batch Releases
- Average Energy of Release

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SITE: LIMERICK GENERATING STATION - UNITS 1 & 2  
 EFFLUENT REPORT - 2000  
 DATE: 03/01/2001 10:45:21 AM  
 GASEOUS EFFLUENTS FOR RELEASE POINT - OIL INCINERATION

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	Qtr 1	Batch Mode Qtr 2	Qtr 3	Qtr 4
Number of Batch Releases	4.00E+00	1.00E+00	0.00E+00	0.00E+00
Total time period for batch releases (min)	7.90E+03	1.38E+03	0.00E+00	0.00E+00
Maximum time period for batch release (min)	2.10E+03	1.38E+03	0.00E+00	0.00E+00
Average time period for batch release (min)	1.97E+03	1.38E+03	0.00E+00	0.00E+00
Minimum time period for batch release (min)	1.05E+03	1.38E+03	0.00E+00	0.00E+00

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GASEOUS EFFLUENTS FOR RELEASE POINT - OTHER BATCH RELEASES

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	Qtr 1	Batch Mode Qtr 2	Qtr 3	Qtr 4
Number of Batch Releases	2.00E+00	0.00E+00	0.00E+00	0.00E+00
Total time period for batch releases (min)	6.60E+02	0.00E+00	0.00E+00	0.00E+00
Maximum time period for batch release (min)	4.20E+02	0.00E+00	0.00E+00	0.00E+00
Average time period for batch release (min)	3.30E+02	0.00E+00	0.00E+00	0.00E+00
Minimum time period for batch release (min)	2.40E+02	0.00E+00	0.00E+00	0.00E+00

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AVERAGE ENERGY OF DECAY FOR ACTIVATION AND FISSION GASES FOR 2000

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Average Beta Energy of decay:	3.03E-01 MeV
Average Gamma Energy of decay:	5.11E-01 MeV

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### III. ATTACHMENTS (continued)

#### 6. Abnormal Releases

##### A. Liquid

There were no abnormal liquid releases for year 2000.

##### B. Gaseous

There were no abnormal gaseous releases for year 2000.

#### 7. Description of LGS Effluent Release Points

Gaseous Release Point = North Stack, Common

Gaseous Release Point = Unit 1 South Stack

Gaseous Release Point = Unit 2 South Stack

Gaseous Release Point = Hot Maintenance Shop

Gaseous Release Point = Oil Incineration - Aux Boiler A

Gaseous Release Point = Other Batch Releases

Liquid Release Point = Liquid Radwaste Discharge

#### 8. Description of LGS Liquid Dose Receptors

Receptor 1 = LGS Liquid Radwaste Discharge Point

Receptor 2 = Citizens Home Water Company

Receptor 3 = Phoenixville Water Company

Receptor 4 = Philadelphia Suburban Water Company

Receptor 5 = City of Philadelphia Crew Course

### III. ATTACHMENTS (continued)

#### B. RADIATION MONITORS OUT-OF-SERVICE CONDITION

There are no radiation monitor out-of-service conditions to report.

#### C. REVISION TO PREVIOUS SUBMITTAL

There are no revisions to previous submittals.

#### D. OFFSITE DOSE CALCULATION MANUAL REVISIONS

The ODCM was not revised during the year 2000.

#### E. EVENTS

There were no events to report for the year 2000.