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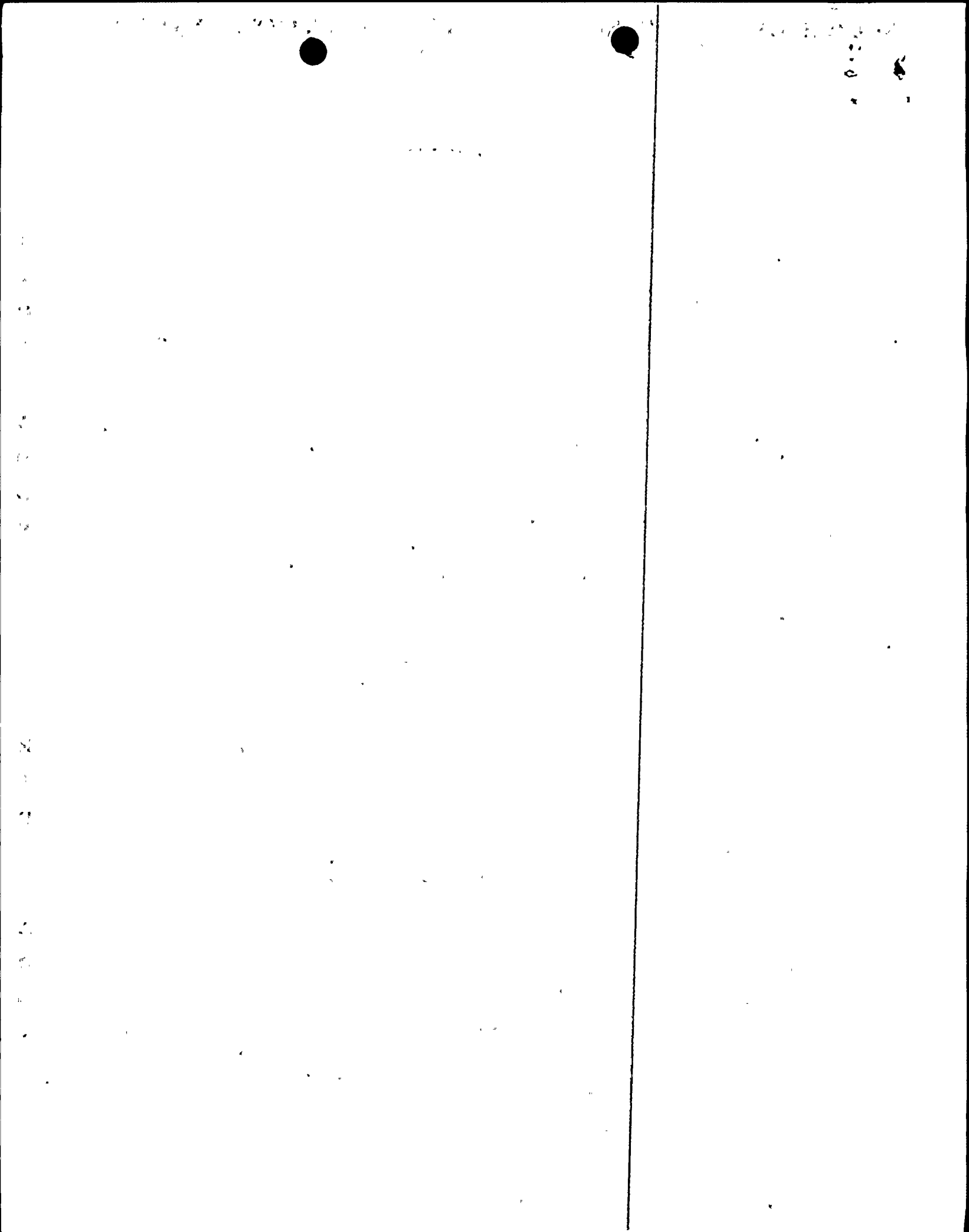
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P. O. Box 165 • New Hill, N. C. 27562

R. B. RICHEY  
Manager  
Harris Nuclear Project

AUG 3 0 1990

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SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1  
DOCKET NO. 50-400  
LICENSE NO. NPF-63  
SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

Gentlemen:

In accordance with Technical Specification 6.9.1.4., the Semiannual Radioactive Effluent Release Report is attached for the Shearon Harris Nuclear Power Plant. This report covers the period from January 1, 1990 through June 30, 1990.

Very truly yours,



R. B. Richey, Manager  
Harris Nuclear Project

RBR:dw

Attachment

cc: Mr. R. A. Becker (NRR)  
Mr. S. D. Ebnetter (NRC - RII)  
Mr. J. E. Tedrow (NRC - SHNPP)

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SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

January 1, 1990 to June 30, 1990

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Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Introduction

This Semiannual Radioactive Effluent Release Report is in accordance with Technical Specification 6.9.1.4 to the Shearon Harris Nuclear Power Project (SHNPP) Operating License No. NPF-63. It provides effluent monitoring information obtained in fulfillment of the plant's Radiological Effluent Technical Specifications (RETS).

The Shearon Harris Nuclear Power Plant achieved initial criticality on January 3, 1987. This report covers the period from January 1, 1990 to June 30, 1990. During this period, the plant was in Cycle 3 operation.

Discussion

Appendices 1 and 2:

The information on gaseous and liquid effluents and solid waste is given in accordance with Regulatory Guide 1.21 (Rev. 1) Appendix B format. As required by Technical Specification 6.9.1.4, the solid waste table has been supplemented to include 10CFR61 class, type of container and solidification agent or absorbent.

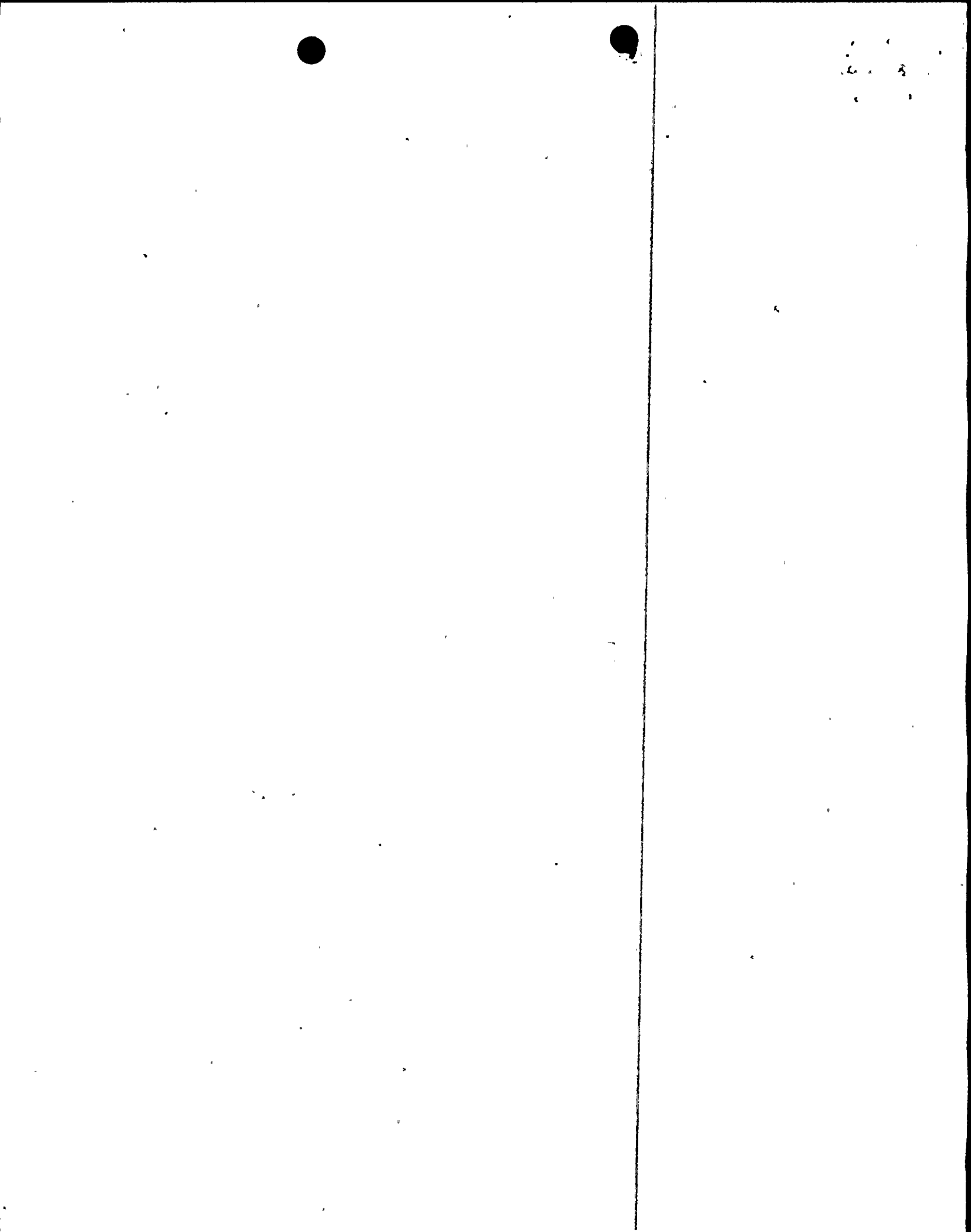
Except for continuous noble gas releases, liquid and gaseous average concentrations (uCi/cc) and total curies released are for only those nuclides that were positively identified. If no activity for a nuclide is reported for a quarter, the Lower Limit of Detection (LLD) tables show a typical sensitivity level for detection of the nuclide.

Continuous noble gas effluent activities were based on hourly average stack monitor readings (in uCi/cc) and stack flow rate estimates based on design fan flow rates. No specific noble gas nuclides were identified in any of the stack gas grab samples taken for characterizing continuous gaseous releases. Therefore, the total noble gas activities are based on stack monitor readings and apportioned as per the GALE code (NUREG 0017) nuclide assumptions as given in the ODCM. Nuclides reported in gaseous batch releases are determined from the isotopic analysis for each batch release.

No activity above background was detected in any continuous liquid release pathway. Therefore, the reported activities are the summation of nuclides in batch releases only.

A total of 33.86 m<sup>3</sup> of solid waste, containing 4.933 Ci of radioactivity, was shipped for burial during this Report period, compared with 101.11 m<sup>3</sup> and 20.86 Ci shipped during the previous Report period.

Two unplanned gaseous releases occurred during this Report period. The first release occurred because of an improper valve line-up in the waste gas system. Approximately 2.38 Ci of noble gases were released. Off-site doses were evaluated with respect to 10CFR20 (dose rate) and 10CFR50 (total dose)



Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Discussion (continued)

limits at the site boundary. The highest dose was calculated to be approximately 0.012% of its respective limit.

The second release occurred when a gas trap failed on a Waste Gas Decay Tank drain line during a routine draining of the tank. Approximately 0.0468 Ci of noble gas were released. Off-site doses were evaluated with respect to 10CFR20 (dose rate) and 10CFR50 (total dose) limits at the site boundary. The highest dose was calculated to be approximately 0.001% of its respective limit.

Appendix 3:

No changes to the Process Control Program (PCP) were made during this Report period.

Appendix 4:

No changes to the Off-Site Dose Calculation Manual (ODCM) were made during this Report period.

Appendix 5:

The annual Land Use Census was performed during this Report period. As a result of the census, Table 3.2-2 of the ODCM, which provides the distances to the nearest special locations, i.e., residences, milk animals, gardens, and meat animals, will be revised in the next Report Period.

To determine whether any of the new special locations yielded calculated doses greater than the locations previously used, the 1990 land use data was coupled with SHNPP 1989 meteorology, and dose calculations were performed by the GASPAR program using the GALE source terms provided in Table 3.2-1 of the ODCM. No significant differences in estimated doses occurred as a result of the 1990 changes in the locations of the nearest resident, garden, or meat animal.

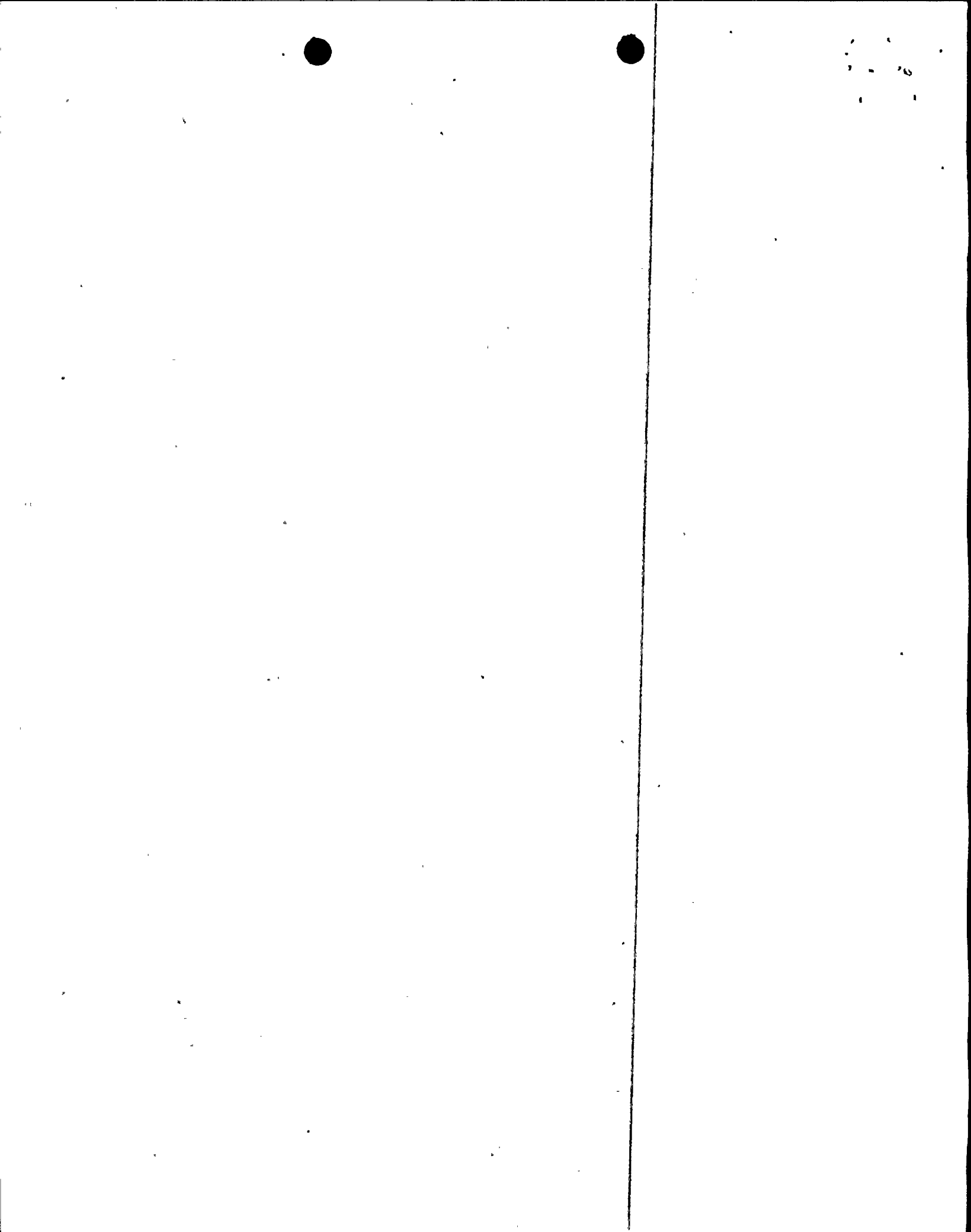
Appendix 6:

All effluent monitor inoperabilities greater than 30 days are given along with a brief explanation. During these periods, compensatory sampling and flow rate estimations consistent with Technical Specification requirements have provided accountability and control of effluents. Modifications performed to the Radiation Monitoring System have improved system reliability.

No unprotected outdoor tank or gas storage tank exceeded Tech Spec limits during this Report period.

Appendix 7:

No major modifications were made to the Radwaste System during this Report period.



Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 1: Supplemental Information

1. Regulatory Limits

A. Fission and activation gases

(1) Calendar Quarter

- a. 5 mrad gamma
- b. 10 mrad beta

(2) Calendar Year

- a. 10 mrad gamma
- b. 20 mrad beta

B. I-131, I-133, I-135, H-3 and particulates with half-lives greater than eight days

(1) Calendar Quarter

- a. 7.5 mrem to any organ

(2) Calendar Year

- a. 15 mrem to any organ

C. Liquid effluents

(1) Calendar Quarter

- a. 1.5 mrem to total body
- b. 5 mrem to any organ

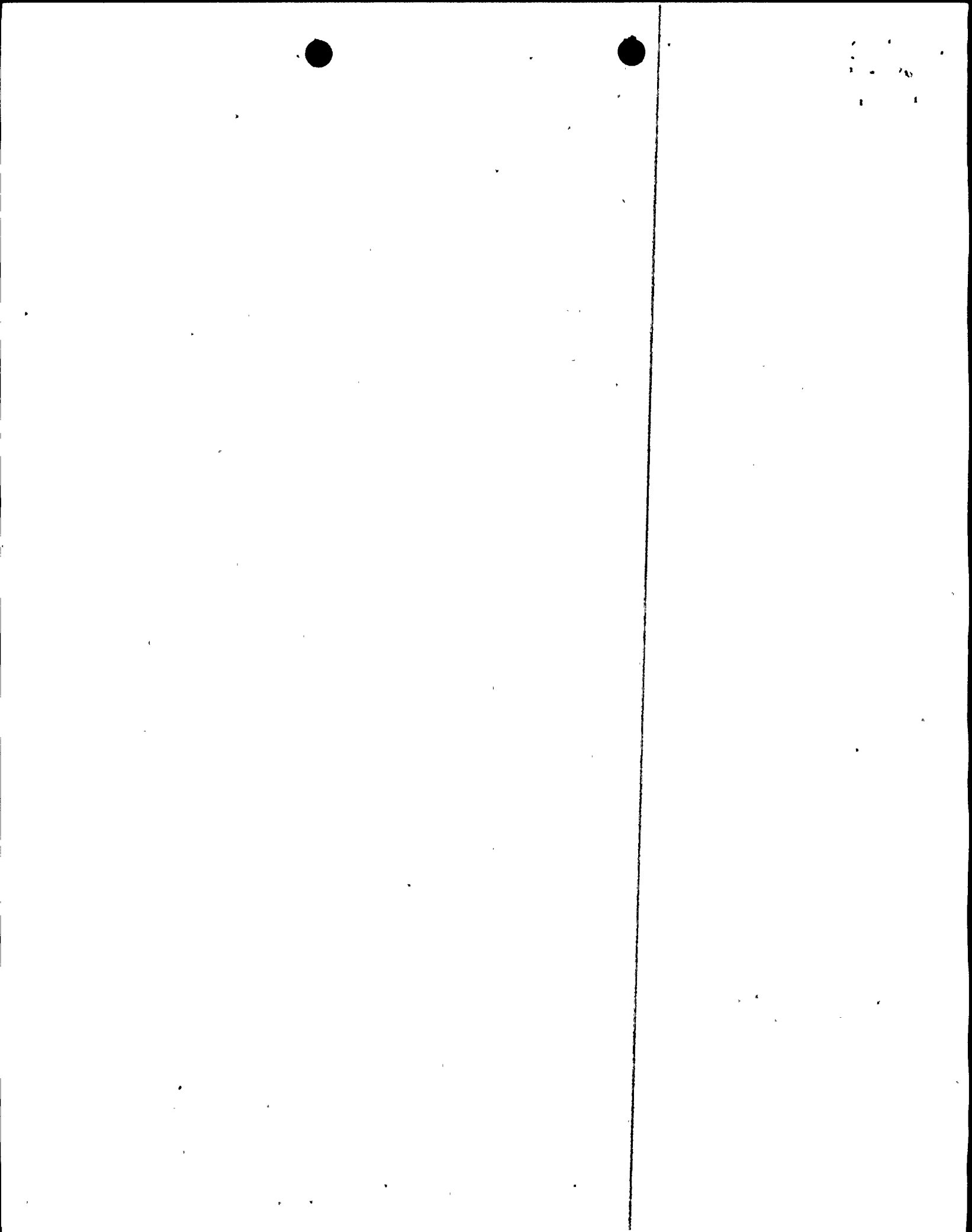
(2) Calendar Year

- a. 3 mrem to total body
- b. 10 mrem to any organ

2. Maximum permissible concentrations and dose rates which determine maximum instantaneous release rates.

A. Fission and activation gases

- (1) 500 mrem/year to total body
- (2) 3000 mrem/year to the skin



Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 1 (Continued): Supplemental Information

2. Maximum permissible concentrations and dose rates which determine maximum instantaneous release rates (Continued).

B. I-131, I-133, I-135, H-3 and particulates with half-lives greater than eight days.

1500 mrem/year to any organ

C. Liquid effluents

The concentration of radioactive material released in liquid effluents to unrestricted areas after dilution shall be limited to the concentration specified in 10CFR20, Appendix B, Table II, Column 2, for radionuclides other than dissolved or entrained noble gases. For dissolved and entrained noble gases, the MPC shall be equal to  $2.0E-4$  uCi/ml.

3. Average Energy (E)

N/A at SHNPP. SHNPP determines doses and dose rates based on actual release, not on an average energy value.

4. Measurements and Approximations of Total Radioactivity

A. Fission and activation gases

Measurements by continuous monitors of activity concentrations times total stack flow, and analysis by gamma spectroscopy and liquid scintillation counting for specific radionuclides in representative grab samples.

B. Iodines

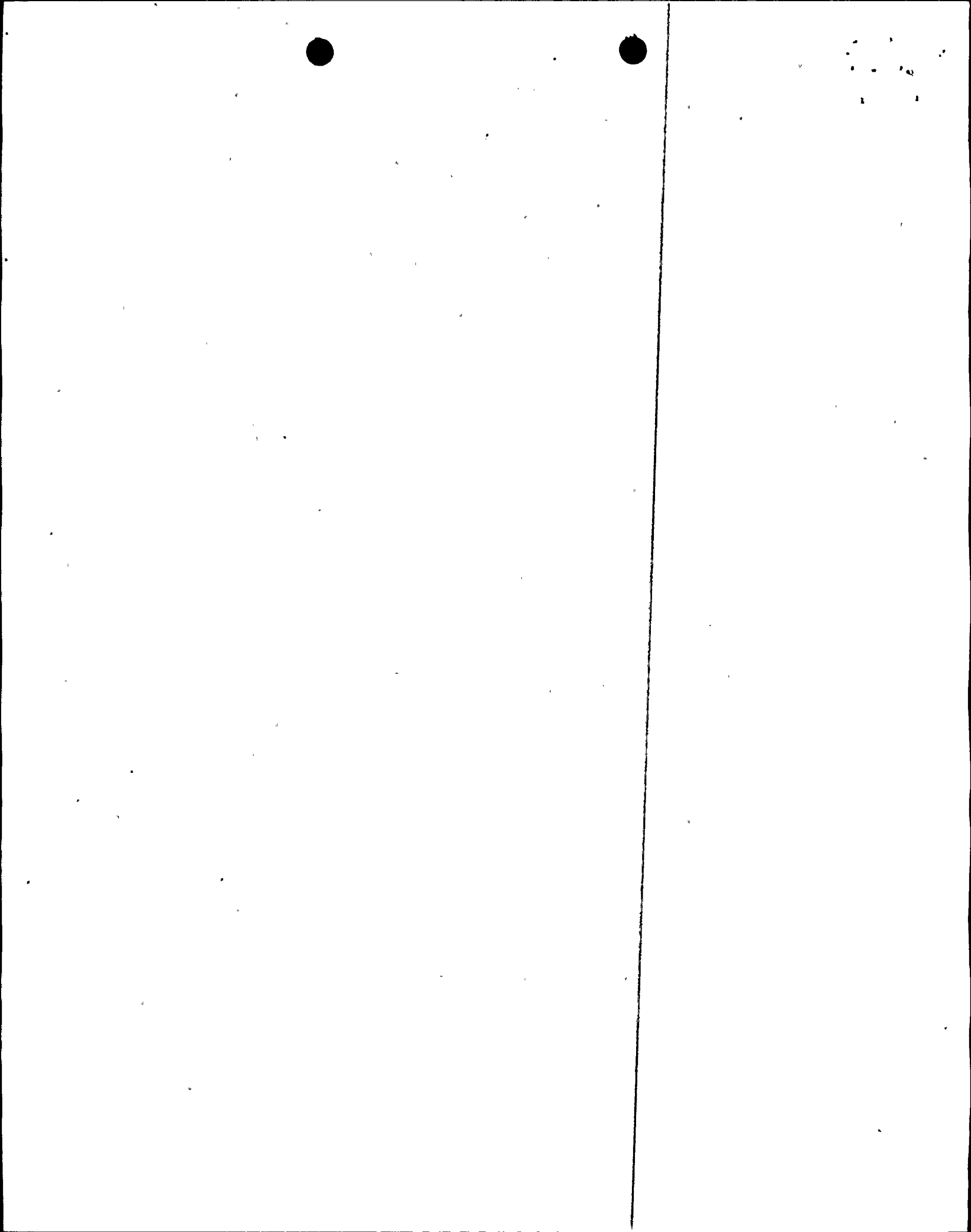
Continuous charcoal cartridge sampling and analysis by gamma spectroscopy for specific radionuclides times total stack flow.

C. Particulates

Continuous particulate sampling and analysis by gamma spectroscopy, alpha counting and radiochemical analysis for specific radionuclides times total stack flow.

D. Liquid Effluents

Pre-release representative sampling and analysis by gamma spectroscopy and liquid scintillation counting for specific radionuclides times total release volume.





Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 1 (Continued): Supplemental Information

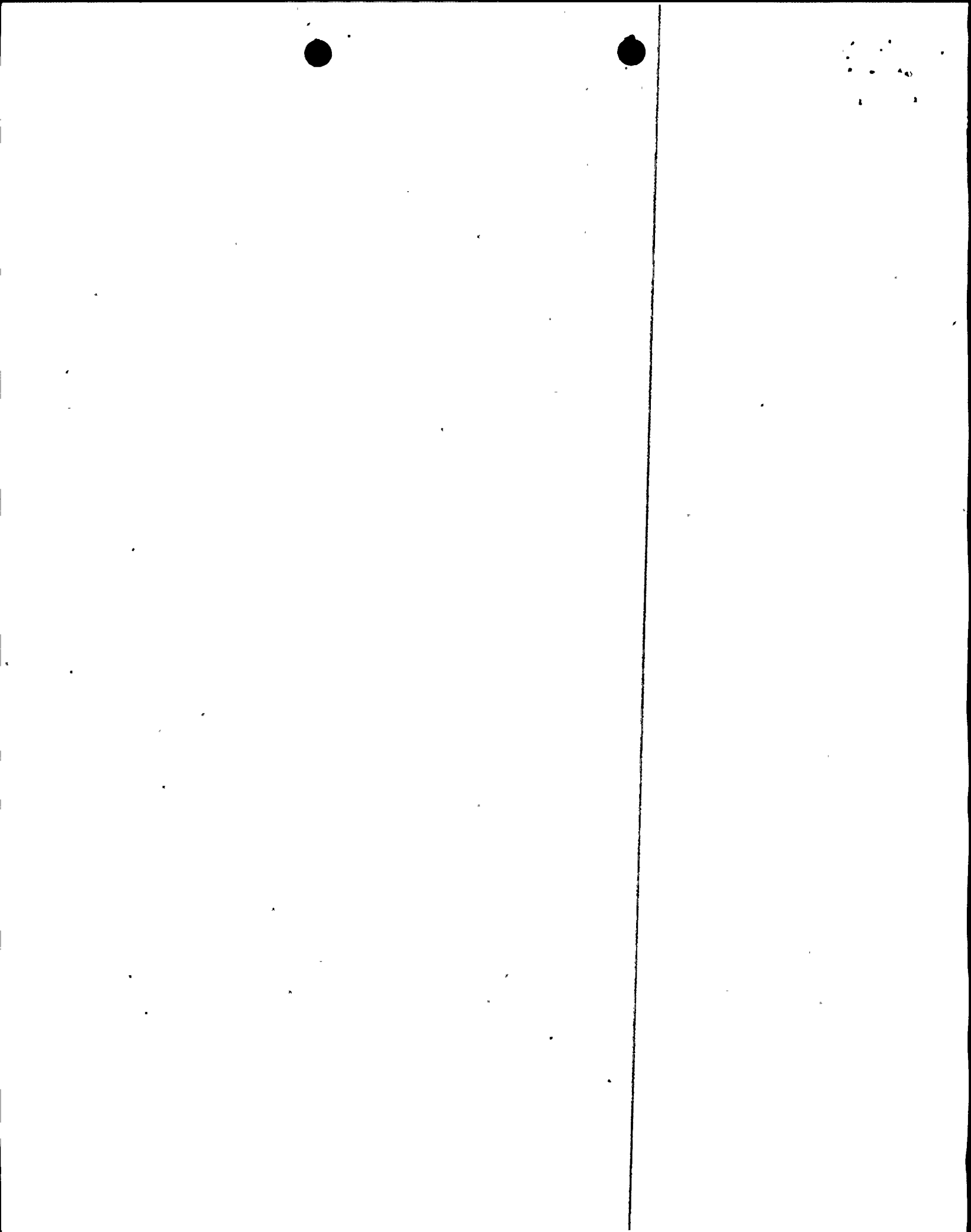
5. Routine Batch Releases

A. Liquid

(1) Number of batch releases:	8.90 E+01
(2) Total time period for batch releases:	5.52 E+04 min.
(3) Maximum time for a batch release:	8.44 E+02 min.
(4) Average time for a batch release:	6.20 E+02 min.
(5) Minimum time for a batch release:	2.00 E+00 min.
(6) Average stream flow during periods of release:	6.31 E+03 gpm

B. Gaseous

(1) Number of batch releases:	2.60 E+01
(2) Total time period for batch releases:	1.93 E+04 min.
(3) Maximum time for a batch release:	3.01 E+03 min.
(4) Average time for a batch release:	7.44 E+02 min.
(5) Minimum time for a batch release:	3.00 E+00 min.



Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 1 (Continued): Supplemental Information

6. Abnormal Releases

A. Liquid

No abnormal liquid releases were made in the period.

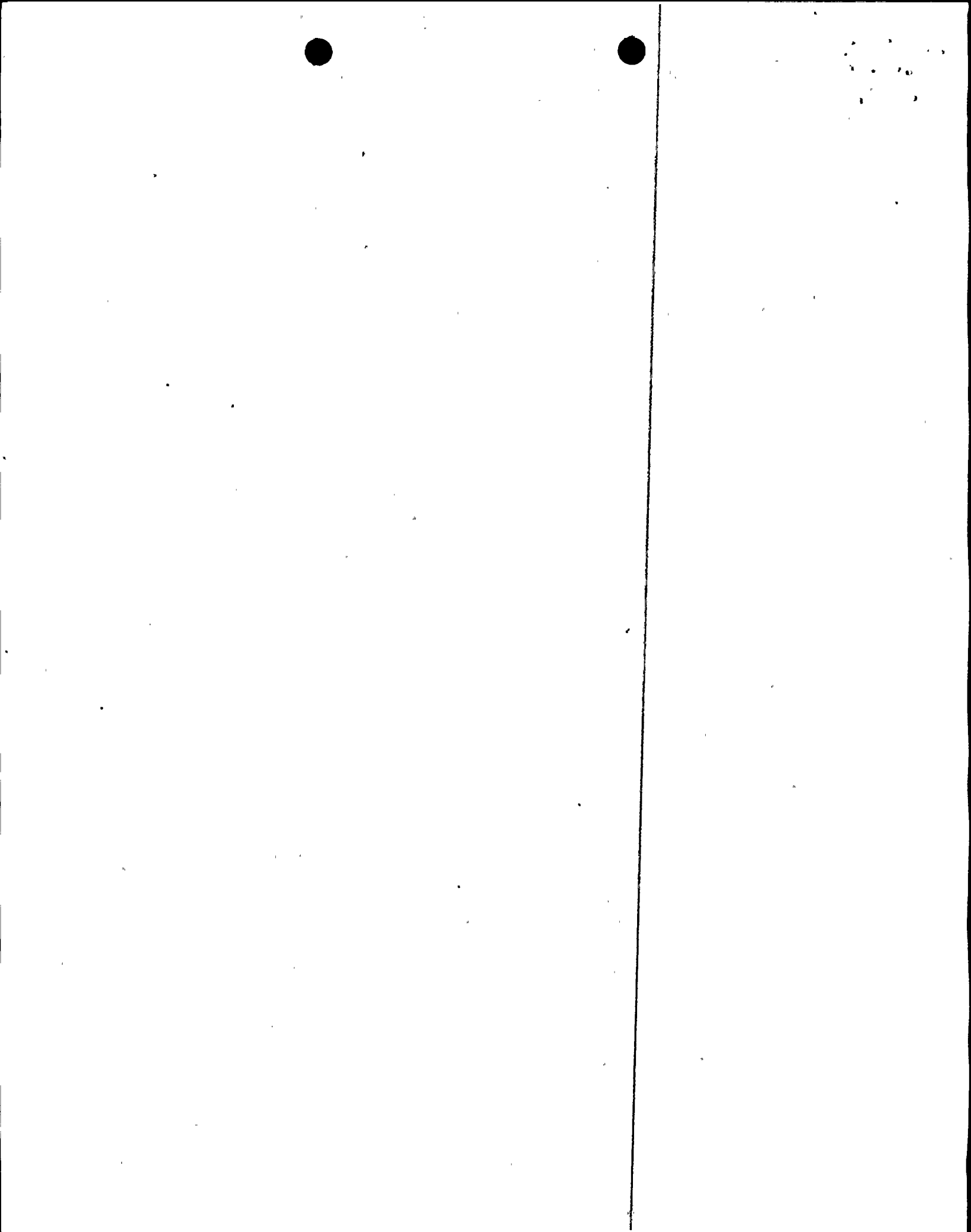
B. Gaseous

Two unplanned releases occurred during this Report period.

The first release occurred between May 3, 1990 and May 6, 1990, when an incorrect valve line-up allowed gas to escape from the Waste Gas Processing System. Approximately 2.38 E+00 Ci of noble gas was released to the Waste Processing Building (WPB) Vent Stack 5.

The second release occurred on June 17, 1990 when a gas trap failed on the drain line during a routine draining of a waste gas decay tank. This allowed approximately 4.68 E-02 Ci of Noble Gas to escape to the WPB, where it was picked up by WPB ventilation and exhausted to atmosphere.

Both releases were monitored by WPB Vent Stack 5 radiation monitors. Off-site doses were evaluated with respect to 10CFR20 (dose rate) and 10CFR50 (total dose) limits at the site boundary and the highest doses were calculated to be approximately 0.012% and of 0.001% of their respective limit for the first and second release, respectively. Both of the release source terms have been added to the BATCH Mode releases in Appendix 2, Enclosure 2, Table 1.



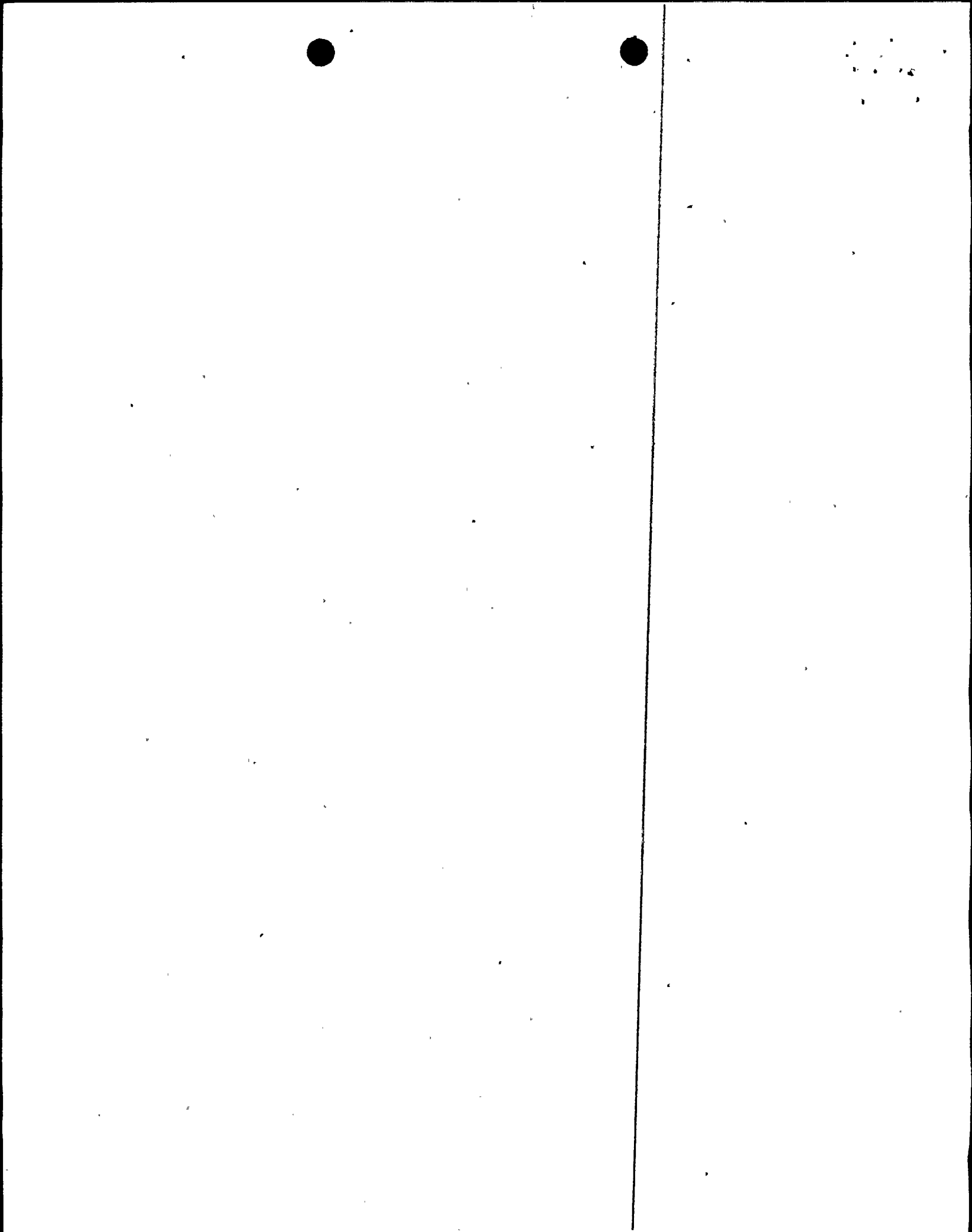
Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 2: Effluent and Waste Disposal Report

Enclosure 1 : LOWER LIMIT OF DETECTION (LLD)

1. LLD's for Gaseous Effluents

NUCLIDE	LLD (uCi/cc)
=====	=====
H - 3	1.01 E-08
Ar-41	4.42 E-08
Cr-51	1.08 E-13
Mn-54	1.56 E-14
Co-58	1.54 E-14
Fe-59	3.72 E-14
Co-60	3.62 E-14
Zn-65	5.94 E-14
Kr-85	8.56 E-06
Kr-85m	2.17 E-08
Kr-87	3.82 E-08
Kr-88	2.63 E-08
Sr-89	7.91 E-16
Sr-90	4.99 E-16
Nb-95	1.43 E-14
Mo-99	1.09 E-13
I -131	1.19 E-14
Xe-131m	7.78 E-07
I -132	3.84 E-14
I -133	1.82 E-13
Xe-133	4.48 E-08
Xe-133m	1.60 E-07
Cs-134	1.12 E-14
I -135	9.64 E-10
Xe-135	1.93 E-08
Xe-135m	4.88 E-07
Cs-137	1.42 E-14
Xe-138	9.68 E-07
Ba-140	3.81 E-14
La-140	4.27 E-14
Ce-141	1.70 E-14
Ce-144	7.48 E-14
Gross Alpha	4.28 E-15



Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 2 (Continued): Effluent and Waste Disposal Report  
Enclosure 1 : LOWER LIMIT OF DETECTION (LLD)

2. LLD's for Liquid Effluents

NUCLIDE	LLD(uCi/ml)
=====	=====
H - 3	3.22 E-06
Be- 7	2.77 e-07
Na- 24	4.63 E-08
Ar- 41	6.61 E-08
Cr- 51	2.99 E-07
Mn- 54	2.86 E-08
Fe- 55	1.37 E-07
Co- 57	1.69 E-08
Co- 58	2.80 E-08
Fe- 59	6.47 E-08
Co- 60	4.31 E-08
Zn- 65	7.28 E-08
Kr- 85m	3.78 E-08
Sr- 89	1.57 E-09
Sr- 90	1.43 E-09
Zr- 95	4.72 E-08
Nb- 95	5.29 E-08
Nb- 97	4.19 E-08
Mo- 99	2.02 E-07
Tc- 99m	1.65 E-08
Ag-110m	2.43 E-08
Sn-113	3.63 E-08
Sb-122	3.98 E-08
Sb-124	1.62 E-08
Sb-125	7.17 E-08
Te-131	4.68 E-08
I -131	3.49 E-08
I -132	3.20 E-08
I -133	2.41 E-08
I 134	3.49 E-08
Xe-131m	1.51 E-06
Xe-133	9.45 E-08
Xe-133m	2.28 E-07
Xe-135	4.03 E-08
Cs-134	2.35 E-08
Cs-137	2.93 E-08
Cs-138	2.24 E-07
Ba-140	7.51 E-08
La-140	5.77 E-08
Ce-141	3.54 E-08
Ce-144	1.97 E-07
Pr-144	2.31 E-06
Hf-181	2.87 E-08
Gross Alpha	6.18 E-08





Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 2 (Continued): Effluent and Waste Disposal Report  
Enclosure 2 : Effluents Released

Table 1A : GASEOUS EFFLUENTS.- SUMMATION OF ALL RELEASES

	Units	Quarter 1	Quarter 2	Est. Total Error %
1. Fission & Activation Gases				
A. Total Release	Ci	1.18 E+02	1.65 E+02	4.50 E+01
B. Average Release Rate for Period	uCi/sec	1.52 E+01	2.09 E+01	
C. Percent of Technical Specification Limit	%	4.00 E-01	5.49 E-01	
2. Iodines (I-131, I-133, I-135)				
A. Total Iodines	Ci	0.00 E+00	0.00 E+00	2.00 E+01
B. Average Release Rate for Period	uCi/sec	0.00 E+00	0.00 E+00	
C. Percent of Technical Specification Limit	%	0.00 E+00	0.00 E+00	
3. Particulates				
A. Particulates with T1/2 > 8 days	Ci	1.68 E-05	8.99 E-06	2.00 E+01
B. Average Release Rate for Period	uCi/sec	2.16 E-06	1.14 E-06	
C. Percent of Technical Specification Limit	%	1.97 E-03	1.05 E-03	
D. Gross Alpha Radioactivity	Ci	0.00 E+00	0.00 E+00	
4. Tritium				
A. Total Release	Ci	0.00 E+00	0.00 E+00	3.00 E+01
B. Average Release Rate for Period	uCi/sec	0.00 E+00	0.00 E+00	
C. Percent of Technical Specification Limit	%	0.00 E+00	0.00 E+00	



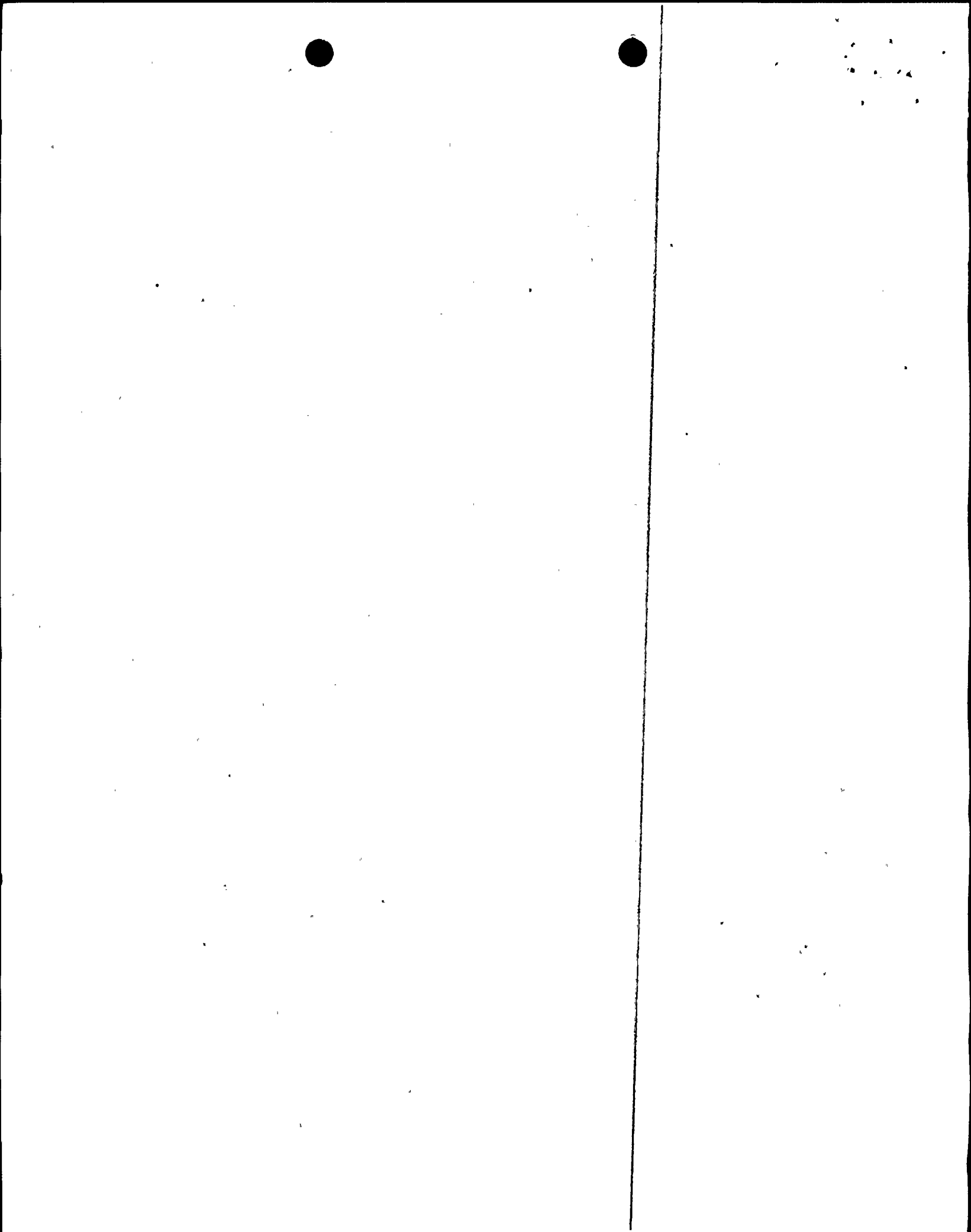
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Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 2 (Continued): Effluent and Waste Disposal Report  
Enclosure 2 : Effluents Released

Table 1B : GASEOUS EFFLUENTS - ELEVATED RELEASES

All releases at Shearon Harris are made as ground releases.



Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 2 (Continued): Effluent and Waste Disposal Report  
Enclosure 2 : Effluents Released  
Table 1C : GASEOUS EFFLUENTS - GROUND LEVEL RELEASES

1. Fission and Activation Gases

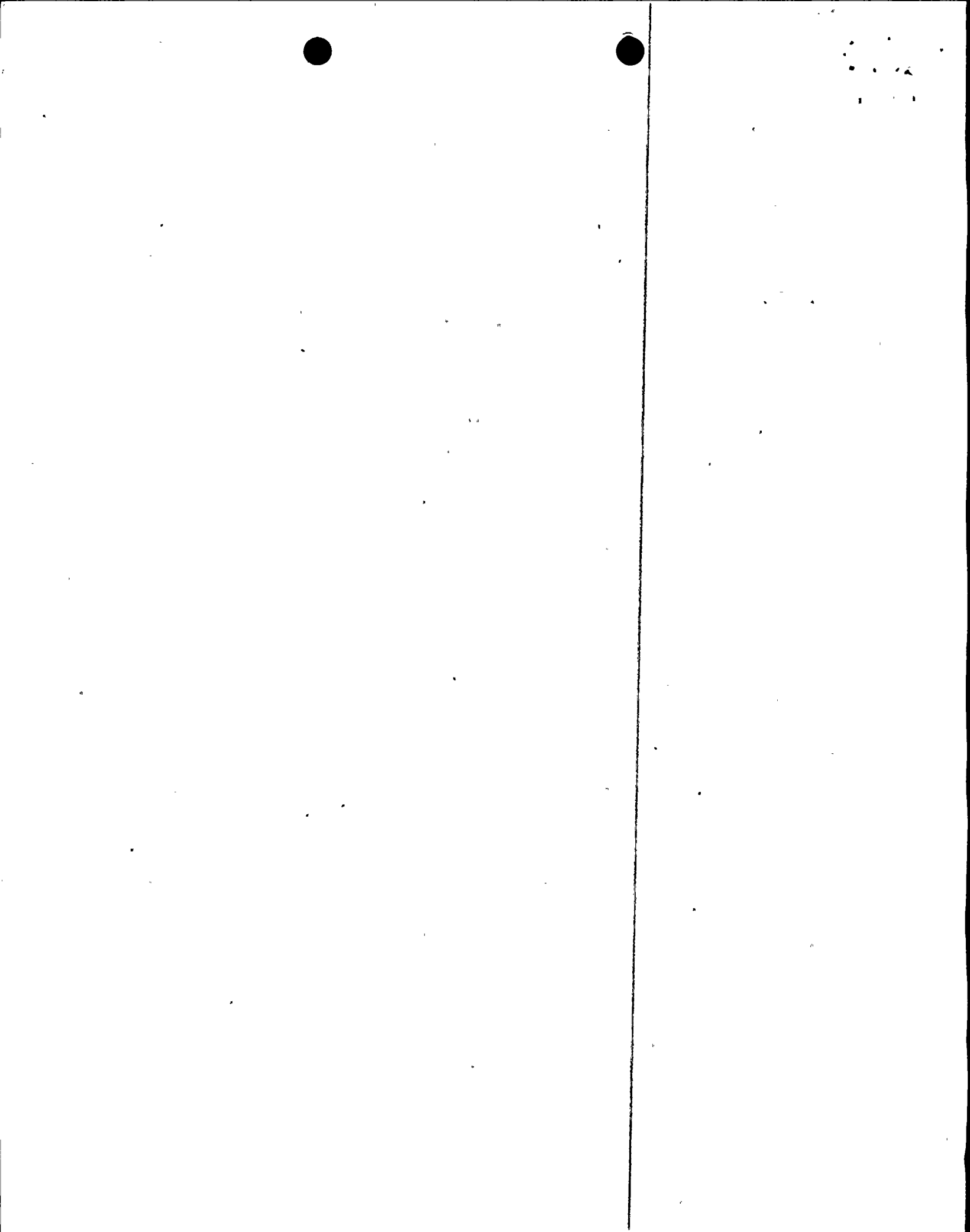
Nuclides Released	Units	Continuous Mode *		Batch Mode **	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
H-3	Ci	< LLD	< LLD	< LLD	< LLD
Ar-41	Ci	< LLD	< LLD	5.30 E-02	7.80 E-03
Kr-85	Ci	< LLD	< LLD	1.40 E-02	6.56 E-02
Kr-85m	Ci	2.55E+00	3.49E+00	< LLD	3.04 E-02
Kr-87	Ci	8.48E-01	1.16E+00	< LLD	1.03 E-02
Kr-88	Ci	4.24E+00	5.81E+00	< LLD	4.07 E-02
Xe-131m	Ci	< LLD	< LLD	< LLD	1.35 E-03
Xe-133	Ci	1.02E+02	1.40E+02	1.96 E-02	1.70 E+00
Xe-133m	Ci	1.70E+00	2.33E+00	< LLD	4.14 E-02
Xe-135	Ci	5.94E+00	8.14E+00	3.45 E-04	6.69 E-01
Xe-135m	Ci	< LLD	< LLD	< LLD	2.81 E-03
Xe-138	Ci	8.48E-01	1.16E+00	< LLD	< LLD
Total	Ci	1.18E+02	1.62E+02	8.69 E-02	2.57 E+00

\* Noble Gas quantities apportioned as per GALE code.

\*\* Includes the activity from both routine and unplanned releases.

2. Iodines

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
I-131	Ci	< LLD	< LLD	< LLD	< LLD
I-132	Ci	< LLD	< LLD	< LLD	< LLD
I-133	Ci	< LLD	< LLD	< LLD	< LLD
I-135	Ci	< LLD	< LLD	< LLD	< LLD
Total	Ci	< LLD	< LLD	< LLD	< LLD



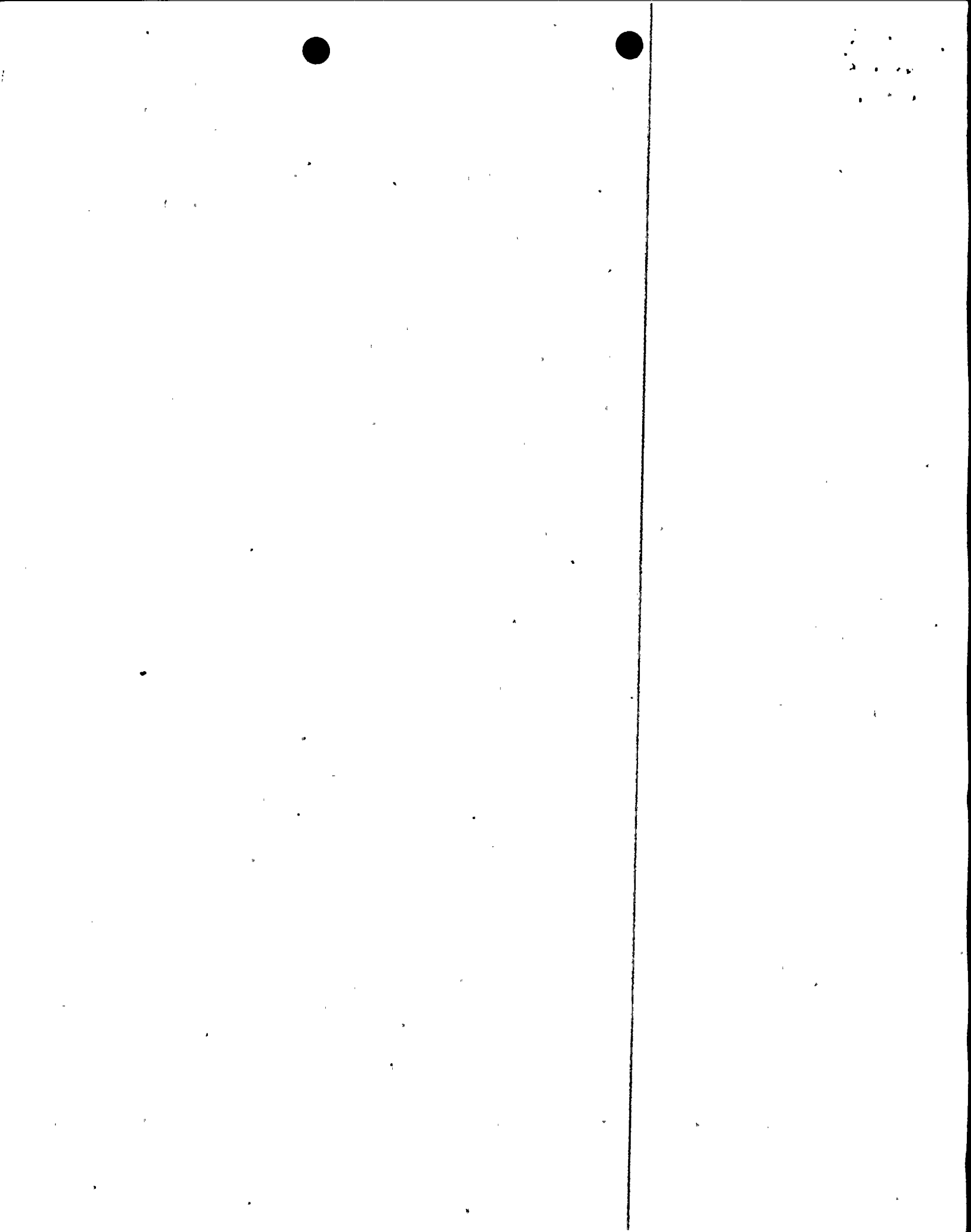
Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 2 (Continued): Effluent and Waste Disposal Report  
Enclosure 2 : Effluents Released

Table 1C (Continued): GASEOUS EFFLUENTS - GROUND LEVEL RELEASES

3. Particulates

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
Cr-51	Ci	< LLD	< LLD	< LLD	< LLD
Mn-54	Ci	< LLD	< LLD	< LLD	< LLD
Fe-59	Ci	< LLD	< LLD	< LLD	< LLD
Co-58	Ci	< LLD	< LLD	< LLD	< LLD
Co-60	Ci	1.68E-05	8.99E-06	< LLD	< LLD
Zn-65	Ci	< LLD	< LLD	< LLD	< LLD
Sr-89	Ci	< LLD	< LLD	< LLD	< LLD
Sr-90	Ci	< LLD	< LLD	< LLD	< LLD
Nb-95	Ci	< LLD	< LLD	< LLD	< LLD
Mo-99	Ci	< LLD	< LLD	< LLD	< LLD
Cs-134	Ci	< LLD	< LLD	< LLD	< LLD
Cs-137	Ci	< LLD	< LLD	< LLD	< LLD
Ba/La-140	Ci	< LLD	< LLD	< LLD	< LLD
Ce-141	Ci	< LLD	< LLD	< LLD	< LLD
Ce-144	Ci	< LLD	< LLD	< LLD	< LLD
Gross Alpha	Ci	< LLD	< LLD	< LLD	< LLD
Total	Ci	1.68E-05	8.99E-06	< LLD	< LLD





Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 2 (Continued): Effluent and Waste Disposal Report  
Enclosure 2 : Effluents Released

Table 2A : LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Units	Quarter 1	Quarter 2	Est. Total Error %
<b>1. Fission &amp; Activation Products</b>				
A. Total Release (not including tritium, gases, or alpha)	Ci	1.55 E-01	5.36 E-02	3.50 E+01
B. Average Diluted Concentration during Period	uCi/ml	4.97 E-08	1.72 E-08	
C. Percent of Technical Specification Limit	%	7.24 E-02	3.22 E-02	
<b>2. Tritium</b>				
A. Total Release	Ci	3.47 E+01	1.69 E+02	3.50 E+01
B. Average Diluted Concentration during Period	uCi/ml	1.11 E-05	5.39 E-05	
C. Percent of Technical Specification Limit	%	3.71 E-01	1.80 E+00	
<b>3. Dissolved and Entrained Gases</b>				
A. Total Release	Ci	1.76 E-04	1.56 E-04	3.50 E+01
B. Average Diluted Concentration during Period	uCi/ml	5.64 E-11	4.98 E-11	
C. Percent of Technical Specification Limit	%	2.82 E-05	2.49 E-05	
<b>4. Gross Alpha Radioactivity</b>				
Total Release	Ci	< LLD	< LLD	3.50 E+01



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Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 2 (Continued): Effluent and Waste Disposal Report  
Enclosure 2 : Effluents Released

Table 2A : LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Units	Quarter 1	Quarter 2	Est: Total Error %
5. Volume of water released prior to dilution				
A. Batch Release	liters	3.16 E+06	2.49 E+06	1.00 E+01
B. Continuous Release	liters	1.69 E+07	1.56 E+07	1.00 E+01
6. Volume of dilution water used during period	liters	3.10 E+09	3.12 E+09	1.00 E+01
7. Total Volume of water	liters	3.12 E+09	3.14 E+09	1.00 E+01



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Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 2 (Continued): Effluent and Waste Disposal Report  
Enclosure 2 : Effluents Released

Table 2B : LIQUID EFFLUENTS

1. Fission and Activation Products

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
H-3	Ci	< LLD	< LLD	3.47 E+01	1.69 E+02
Be-7	Ci	< LLD	< LLD	8.03 E-05	< LLD
Na-24	Ci	< LLD	< LLD	< LLD	< LLD
Cr-51	Ci	< LLD	< LLD	1.08 E-03	6.12 E-05
Mn-54	Ci	< LLD	< LLD	1.63 E-03	2.92 E-04
Fe-55	Ci	< LLD	< LLD	1.07 E-02	7.14 E-03
Co-57	Ci	< LLD	< LLD	5.42 E-04	1.88 E-04
Co-58	Ci	< LLD	< LLD	1.22 E-01	3.59 E-02
Fe-59	Ci	< LLD	< LLD	5.89 E-05	< LLD
Co-60	Ci	< LLD	< LLD	1.06 E-02	7.74 E-03
Zn-65	Ci	< LLD	< LLD	1.06 E-04	< LLD
Sr-89	Ci	< LLD	< LLD	1.04 E-05	5.84 E-06
Sr-90	Ci	< LLD	< LLD	2.41 E-05	< LLD
Y-91m	Ci	< LLD	< LLD	< LLD	< LLD
Zr/Nb-95	Ci	< LLD	< LLD	1.63 E-04	< LLD
Nb-97	Ci	< LLD	< LLD	1.45 E-05	< LLD
Mo-99	Ci	< LLD	< LLD	< LLD	< LLD
Tc-99m	Ci	< LLD	< LLD	1.40 E-05	< LLD
Ag-110m	Ci	< LLD	< LLD	6.48 E-06	4.86 E-05
Sn-113	Ci	< LLD	< LLD	< LLD	< LLD
Sb-122	Ci	< LLD	< LLD	7.08 E-06	4.61 E-06
Sb-124	Ci	< LLD	< LLD	< LLD	< LLD
Sb-125	Ci	< LLD	< LLD	6.37 E-03	9.75 E-04
I -131	Ci	< LLD	< LLD	8.96 E-06	5.84 E-05
Te-131	Ci	< LLD	< LLD	< LLD	1.76 E-04
I -132	Ci	< LLD	< LLD	< LLD	< LLD
I -133	Ci	< LLD	< LLD	< LLD	< LLD
I -134	Ci	< LLD	< LLD	< LLD	1.25 E-05
Cs-134	Ci	< LLD	< LLD	1.93 E-04	4.39 E-04
Cs-137	Ci	< LLD	< LLD	2.45 E-04	4.83 E-04
Cs-138	Ci	< LLD	< LLD	< LLD	< LLD
Ba/La-140	Ci	< LLD	< LLD	< LLD	< LLD
Ce-141	Ci	< LLD	< LLD	< LLD	< LLD
Ce-144	Ci	< LLD	< LLD	< LLD	< LLD
Pr-144	Ci	< LLD	< LLD	8.97 E-04	< LLD
Hf-181	Ci	< LLD	< LLD	6.19 E-06	1.24 E-05
Gross Alpha	Ci	< LLD	< LLD	< LLD	< LLD
Total	Ci	< LLD	< LLD	3.49 E+01	1.69 E+02



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Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 2 (Continued): Effluent and Waste Disposal Report  
Enclosure 2 : Effluents Released

Table 2B (Continued) : LIQUID EFFLUENTS

2. Dissolved and Entrained Gases

Nuclides Released	Units	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
Ar-41	Ci	< LLD	< LLD	< LLD	< LLD
Kr-85m	Ci	< LLD	< LLD	< LLD	< LLD
Xe-131m	Ci	< LLD	< LLD	< LLD	< LLD
Xe-133	Ci	< LLD	< LLD	1.55 E-04	1.28 E-04
Xe-133m	Ci	< LLD	< LLD	< LLD	< LLD
Xe-135	Ci	< LLD	< LLD	2.09 E-05	2.81 E-05
Total	Ci	< LLD	< LLD	1.76 E-04	1.56 E-04



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Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 2 (Continued): Effluent and Waste Disposal Report  
Enclosure 3 : Solid Waste Disposal

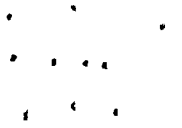
Table 3 : SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

1. Solid Waste Shipped for Burial or Disposal ( WASTE CLASS A )

A.	Type of waste	Units	6 month Period	Est. Total Error (%)	Solid. Agent	* **		No. Ship
						Cont. Type	Form	
a.	Spent Resin, filter sludge, evaporator bottoms, etc.	m3	5.53 E+00	1.00 E+01	N/A	STP	D	1
		Ci	3.35 E+00					
b.	Dry Compressible Waste, contaminated equipment, etc.	m3	2.76 E+01	1.00 E+01	N/A	STP	D	14
		Ci	1.58 E+00					
c.	Irradiated Components, Control rods, etc.	m3 Ci	No waste of this type shipped.					
d.	Other (Describe)	m3 Ci	No waste of this type shipped.					

\* STP - Strong Tight Package

\*\* S - Solidified D - Dewatered



Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 2 (Continued): Effluent and Waste Disposal Report  
Enclosure 3 : Solid Waste Disposal

Table 3 : SOLID WASTE AND IRRADIATED FUEL SHIPMENTS (Continued)

B. Estimate of Major Nuclide Composition (by type of waste)

Only nuclides with > 0.1% composition are listed.

Type of Waste	Nuclide	Percent Composition	Total Activity Ci
a.	Mn-54	2.55 E+00	8.55 E-02
	Fe-55	4.33 E+01	1.45 E+00
	Co-58	3.94 E+01	1.32 E+00
	Co-60	5.88 E+00	1.97 E-01
	Ni-63	8.81 E+00	2.95 E-01
b.	H -3	4.70 E-01	7.51 E-03
	Cr-51	1.12 E+00	1.79 E-02
	Mn-54	1.86 E+00	2.97 E-02
	Fe-55	8.61 E+01	1.37 E+00
	Co-58	3.69 E+00	5.89 E-02
	Co-60	5.50 E+00	8.78 E-02
	Ni-63	5.53 E-01	8.82 E-04
	Nb-95	4.18 E-01	6.68 E-03
	Cs-137	1.19 E-01	1.90 E-03

c. No waste of this type shipped.

d. No waste of this type shipped.



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Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 2 (Continued): Effluent and Waste Disposal Report  
Enclosure 3 : Solid Waste Disposal

Table 3 : SOLID WASTE AND IRRADIATED FUEL SHIPMENTS (Continued)

C. Solid Waste Disposal

Number of Shipments *	1.50 E+01
Mode of Transportation	Truck
Destination	Barnwell, S.C.

\* All 14 of the type 1.A.b shipments were made from the Scientific Ecology Group (SEG) processing facility in Oak Ridge, Tennessee. The other shipment (type 1.A.a) was made from the Harris site.

2. Solid Waste Shipped for Burial or Disposal ( WASTE CLASS B )

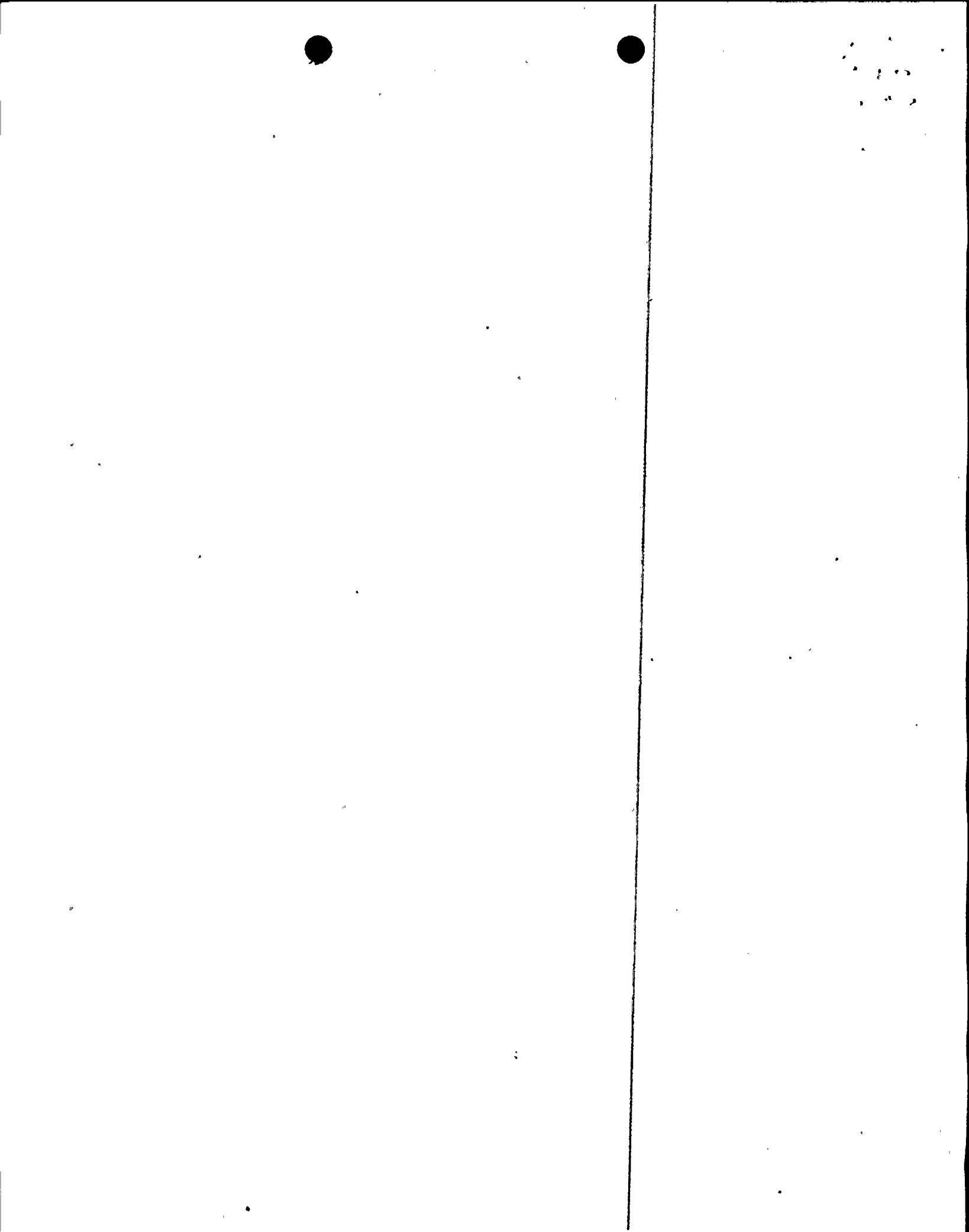
No waste of this type was shipped during this Report period.

3. Solid Waste Shipped for Burial or Disposal ( WASTE CLASS C )

No waste of this type was shipped during this Report period.

4. Irradiated Fuel Shipments (Disposition)

No irradiated fuel was shipped during this Report period.



Semiannual Radioactive Effluent Release Report  
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Appendix 3 : Changes to Process Control Program (PCP)  
Technical Specification 6.13

No changes were made to the PCP during this Report period.



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Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 4 : Changes to the Offsite Dose Calculation Manual (ODCM)  
Technical Specification 6.14

No changes were made to the Offsite Dose Calculation Manual (ODCM) during the Report period.

As a result of the 1990 Land Use Census, Table 3.2-2, Distance to the Nearest Special Locations for the Shearon Harris Nuclear Power Plant, will be changed. These changes are shown in Appendix 5, and will be included in the next Report after approval and incorporation into the ODCM.



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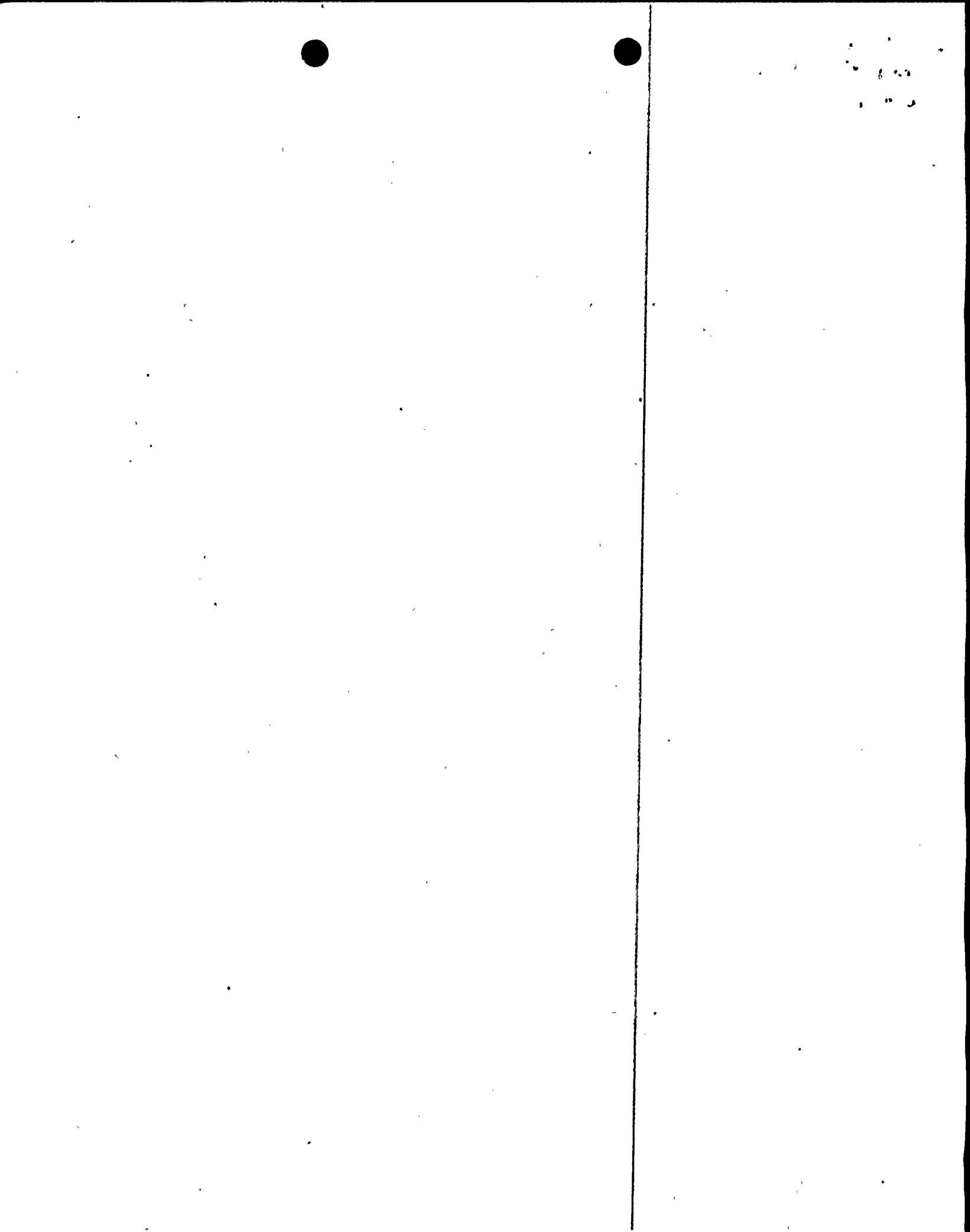
Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 5 : Changes to the Environmental Monitoring Program

Enclosure 1 : Environmental Monitoring Program

Technical Specifications 3.11.2.3  
3.12.1  
3.12.1.c

No changes were made to the Environmental Monitoring Program during the Report period.



Semiannual Radioactive Effluent Release Report  
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Appendix 5 : Changes to the Environmental Monitoring Program  
Enclosure 2 : Land Use Census  
Technical Specifications 3.12.2.a  
3.12.2.b

A Land Use Census was performed in June of 1990. Several changes have occurred in the locations of the nearest resident, garden, and meat animal. None of the changes would necessitate a change in the SHNPP Environmental Monitoring program. These changes will be included as Changes to the ODCM in the next Report.

Table 1 summarizes these locations and the changes. Table 2 lists the kinds of meat animal at each meat animal location.

Table 1

Distance to the Nearest Special Locations  
for the Harris Nuclear Project (Miles)\*  
(Comparison of 1989/1990 Data)

Sector	Exclusion Boundary	Residence		Milk Animal		Garden		Meat Animal	
		1989	1990	1989	1990	1989	1990	1989	1990
N	1.32	2.2	2.2	2.2	2.2	2.2	2.2	2.8	2.2
NNE	1.33	1.8	1.8	4.6	4.6	1.7	1.7	3.6	3.5
NE	1.33	2.3	2.3	---	---	2.3	2.3	2.3	2.3
ENE	1.33	2.0	2.0	---	---	2.0	3.6	---	---
E	1.33	1.9	1.9	---	---	1.9	4.7	2.2	2.2
ESE	1.33	2.7	2.7	---	---	4.4	2.7	2.9	4.4
SE	1.33	4.3	4.3	---	---	4.3	4.3	4.3	4.3
SSE	1.33	4.4	4.4	---	---	---	---	---	---
S	1.36	---	---	---	---	---	---	---	---
SSW	1.33	3.9	3.9	---	---	3.9	3.9	---	---
SW	1.33	2.8	2.8	---	---	2.8	2.8	2.8	---
WSW	1.33	4.3	4.3	---	---	4.3	4.3	4.3	4.3
W	1.33	2.8	2.8	---	---	2.9	2.9	3.1	2.9
WNW	1.33	2.1	2.1	---	---	2.1	2.1	2.5	3.6
NW	1.26	1.8	2.1	---	---	1.8	3.8	1.8	3.8
NNW	1.26	1.5	1.7	---	---	1.7	1.7	1.7	1.7

\* Distance estimates are  $\pm 0.1$  miles except at the exclusion boundary.



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Semiannual Radioactive Effluent Release Report  
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Appendix 5 : Changes to the Environmental Monitoring Program  
Enclosure 2 : Land Use Census  
Technical Specifications 3.12.2.a  
3.12.2.b

Table 2

Meat Animal Type at Nearest Location to SHNPP  
( by Sector )

Sector	Distance (miles)	Meat Type(s)	Owner
N	2.2	Beef/Hogs/Chickens	Goodwin, W.
NNE	3.5	Chickens	Hudson, H.
NE	2.3	Beef/Chickens	James Rest Home
ENE	----	----	----
E	2.2	Chickens/Hogs	Harris, H.
ESE	4.4	Chickens	McLean, E.
SE	4.3	Chickens	Taylor, M.
SSE	----	----	----
S	----	----	----
SSW	----	----	----
SW	----	----	----
WSW	4.3	Chickens	Smith, P.
W	2.9	Chickens	Hill, A.
WNW	3.6	Chickens	Unknown
NW	3.8	Hogs	Stone, D.
NNW	1.7	Beef	Godwin, W.



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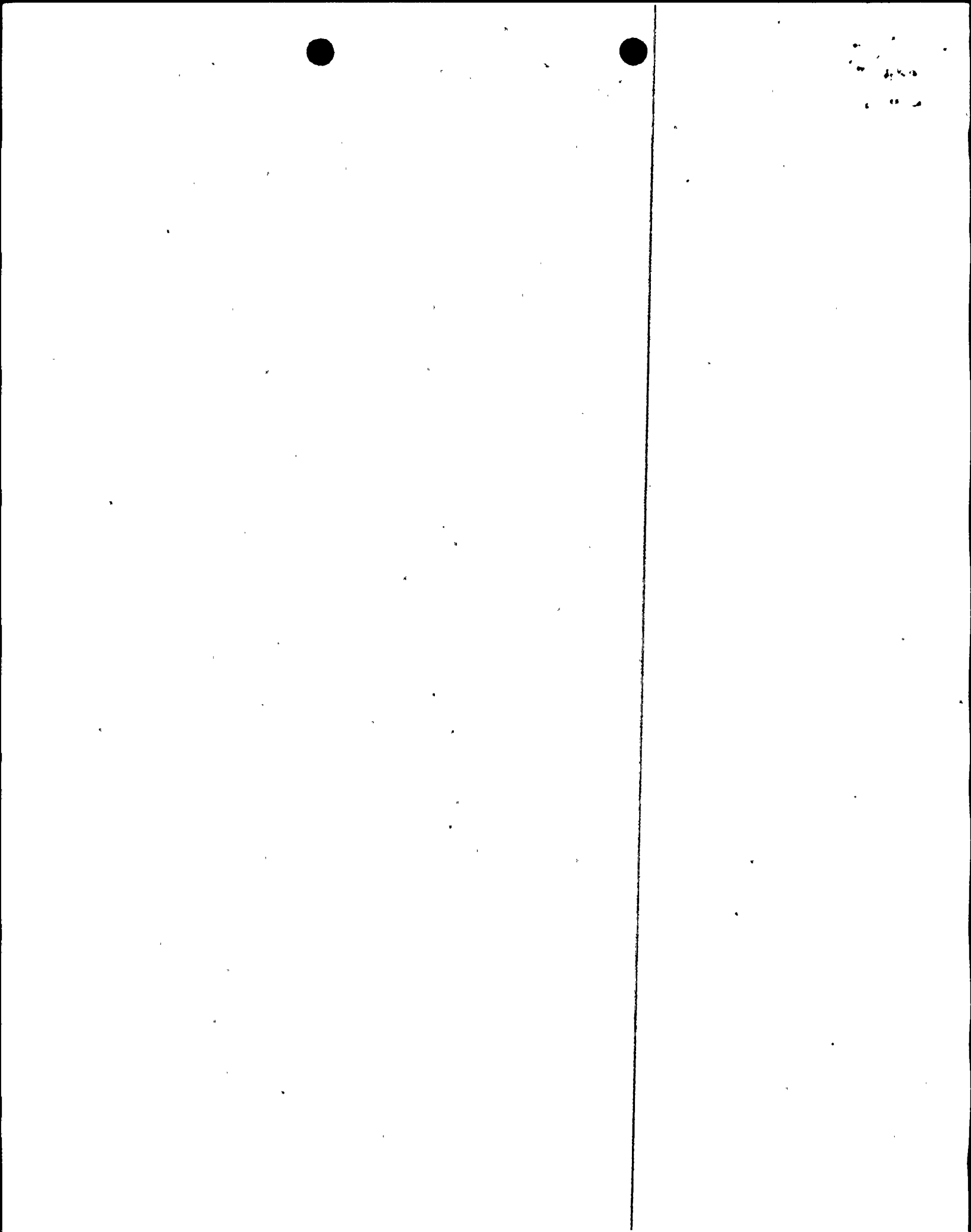


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Appendix 6 : Additional Technical Specification Responsibilities  
Enclosure 1 : Inoperability of Liquid Effluent Monitors  
Technical Specification 3.3.3.10, Action b

Monitors Out-of-Service > 30 Days During the Report Period

Effluent Monitor	Days Inop.	Reason
FT-01MP-1968 A&B Cooling Tower Make-up Bypass Line Flow Rate Monitors	181	Flow monitors A & B are not within the required tolerances, resulting in inaccurate flow measurements.
FT-21WL-6119 Waste Monitor Tank/ Waste Evaporator Condensate Tank Flow Rate Monitors	181	Modification to increase the accuracy and reliability of the readings has been initiated.
FT-*1WL-6193 Treated Laundry & Hot Shower Tanks Flow Rate Monitor	181	Modification to increase the accuracy and reliability of the readings has been initiated.

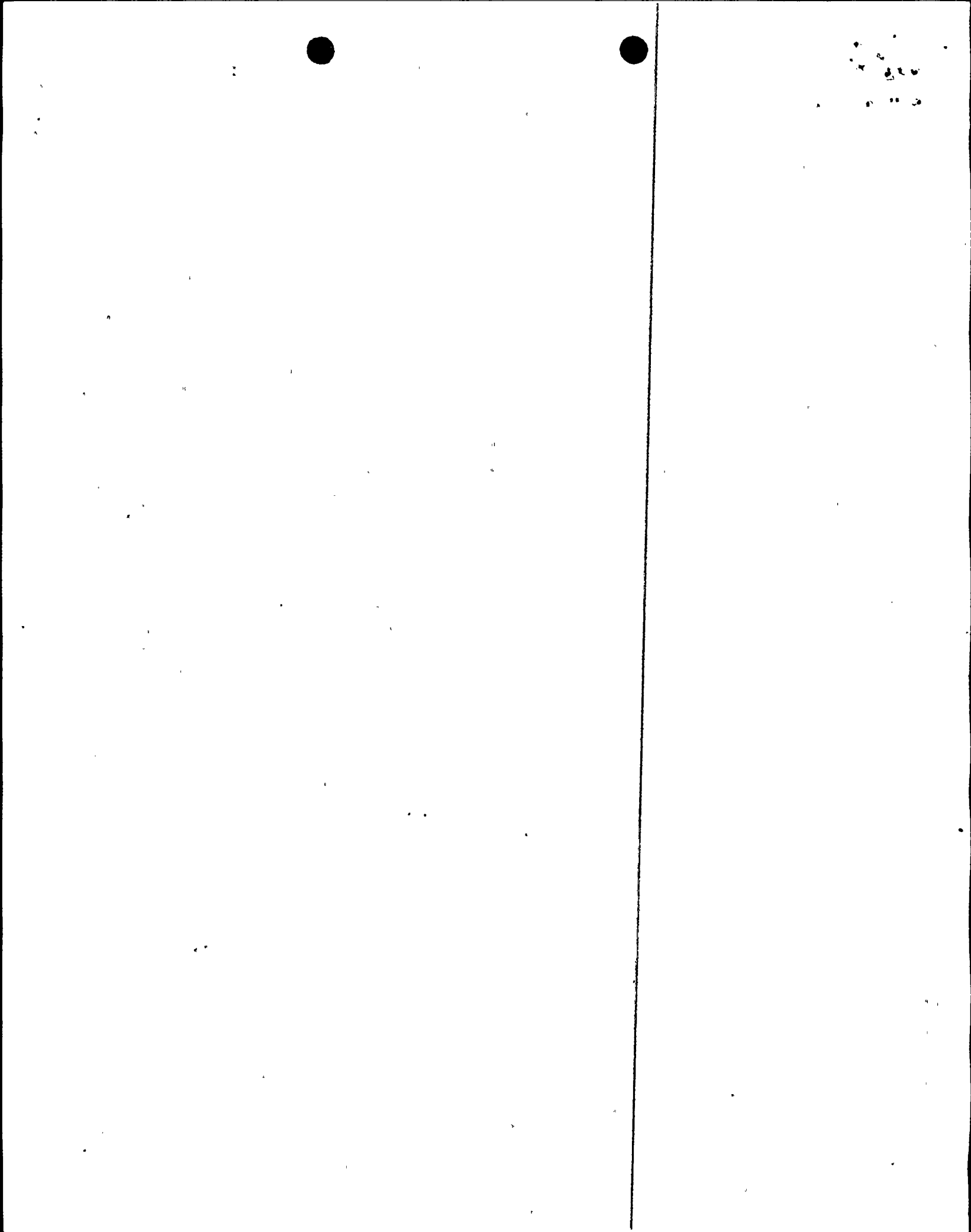


Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 6 (Continued): Additional Technical Specification Responsibilities  
Enclosure 2 : Inoperability of Gaseous Effluent Monitors  
Technical Specification 3.3.3.11, Action a

Monitors Out-of-Service > 30 Days During the Report Period

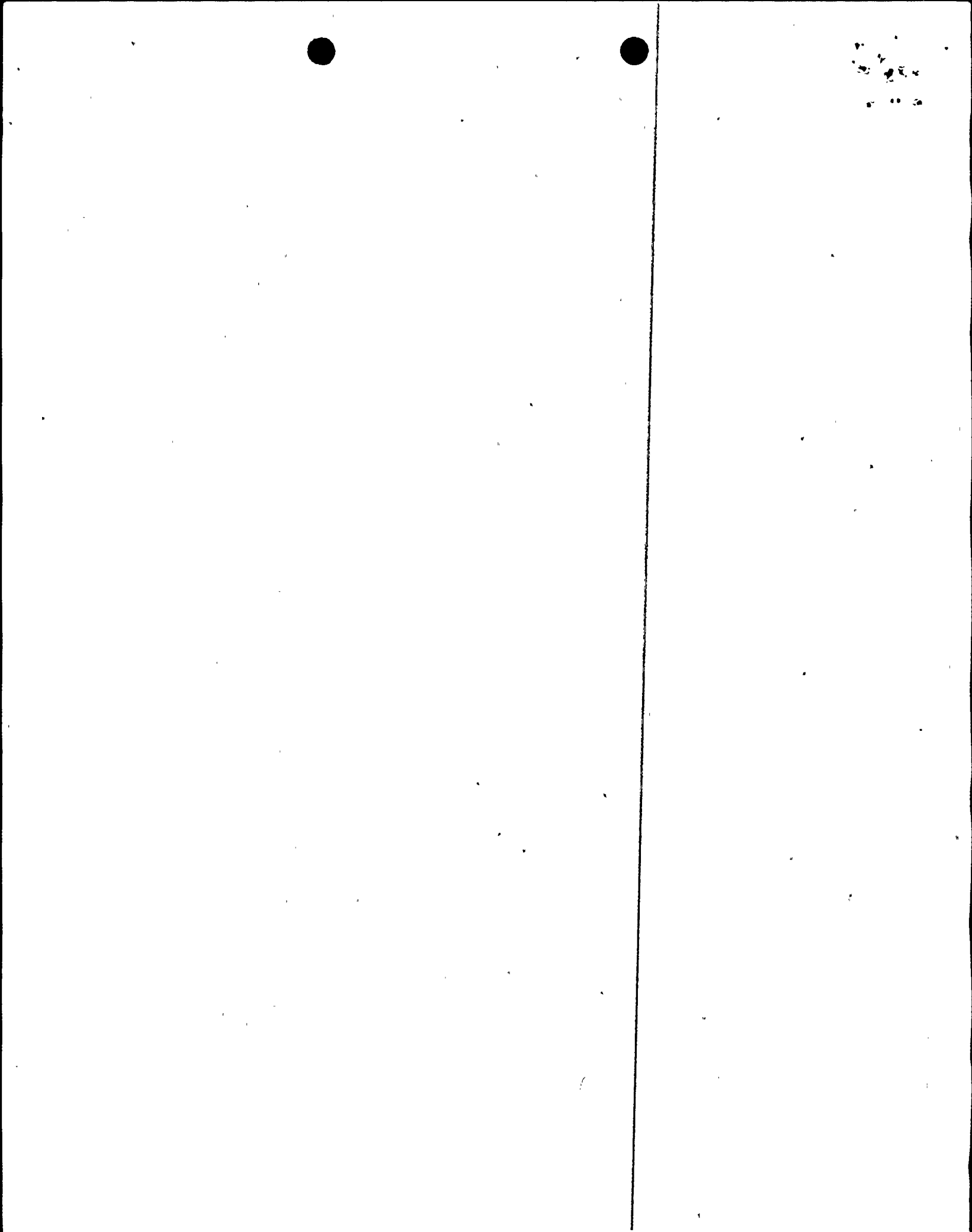
Effluent Monitor	Days Inop.	Reason
PNL-21AV-3509-SA PNL-21AV-3509-1SA Plant Vent Stack Flow Rate Monitor	181	Problems with calibration of flow measurement system resulting in discrepancies between actual and expected flow rates. Modification initiated to correct.
RM-01TV-3536-1 TB Vent Stack 3A Flow Rate Monitor	181	Moisture interferences with the flow measurement system resulting in discrepancies between actual and expected flow rates. Modification initiated to correct.
PNL-1WV-3546 & PNL-1WV-3546-1 WPB Vent Stack 5 Flow Rate Monitor	181	Problems with calibration of flow measurement system results in discrepancies between actual and expected flow rates. Modification initiated to correct.
PNL-1WV-3547 & PNL-1WV-3547-1 WPB Vent Stack 5A Flow Rate Monitor	181	Problems with calibration of flow measurement system resulting in discrepancies between actual and expected flow rates. Modification initiated to correct.
HAI-21WG-1118AW Waste Gas Recombiner "B" Outlet Gas Hydrogen Monitor	181	Modification to improve the reliability of the monitor has been initiated.
OARC-21WG-1119A Waste Gas Recombiner "B" Outlet Gas Oxygen Monitor	181	Modification to improve the reliability of the monitor has been initiated.



Semiannual Radioactive Effluent Release Report  
January 1, 1990 to June 30, 1990

Appendix 6 (Continued): Additional Technical Specification Responsibilities  
Enclosure 3 : Unprotected Outdoor Tanks Exceeding Limits  
Technical Specification 3.11.1.4, Action a

No unprotected outdoor tank exceeded the Technical Specification limit during this Report period.



Semiannual Radioactive Effluent Release Report  
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Appendix 6 (Continued): Additional Technical Specification Responsibilities  
Enclosure 4 : Gas Storage Tanks Exceeding Limits  
Technical Specification 3.11.2.6, Action a

No gas storage tank exceeded the Technical Specification limit during this Report period.



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Semiannual Radioactive Effluent Release Report  
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Appendix 7 : Major Modifications to Radwaste System  
Technical Specification 6.15.1

No major modifications were made to the Radwaste system during this Report period.

