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SOUTHERN COMPANY
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U.S. Nuclear Regulatory Commission
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Edwin I. Hatch Nuclear Plant
Radioactive Effluent Release Report

Ladies and Gentlemen:

In accordance with the provisions of Plant Hatch Technical Specifications, Southern Nuclear Operating Company is providing the Plant Hatch Unit 1 and Unit 2 Radioactive Effluent Release Report. This report covers the period January 1, 2001 through December 31, 2001.

Should you have any questions, please advise.

Respectfully submitted,

Lewis Sumner

H. L. Sumner, Jr

HLS/JHD:ahl

Enclosure: Radioactive Effluent Release Report

cc: (See next page.)

IE48

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SOUTHERN COMPANY

E. I. HATCH NUCLEAR PLANT

UNITS NO. 1 & 2

ANNUAL REPORT

PLANT RADIOACTIVE EFFLUENT RELEASES

JANUARY 1, 2001 THROUGH DECEMBER 31, 2001

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SOUTHERN COMPANY

E. I. HATCH NUCLEAR PLANT

UNITS NO. 1 & 2

ANNUAL REPORT

PLANT RADIOACTIVE EFFLUENT RELEASES

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1.0 Liquid Effluents

1.1 Regulatory Requirements

1.1.1 Concentration Limits

The concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS shall be limited to ten times the concentrations specified in 10 CFR Part 20, Appendix B, Table 2, Column 2, for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 1E-04 microcuries/ml total activity.

1.1.2 Dose Limits

The dose or dose commitment, to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released from each unit to UNRESTRICTED AREAS, shall be limited:

a. During any calendar quarter, to less than or equal to 1.5 mrems to the whole body and to less than or equal to 5 mrems to any organ, and

b. During any calendar year, to less than or equal to 3 mrems to the whole body and to less than or equal to 10 mrems to any organ.

1.2 Effluent Concentration Limit

ECL values used in determining allowable liquid radwaste release rates and concentrations, for principal gamma emitters, I-131, tritium, Sr-89, Sr-90 and Fe-55, are taken from 10 CFR Part 20, Appendix B, Table 2, Column 2.
A tolerance factor of up to 10 is utilized to allow flexibility in establishing practical monitor set points which can accommodate effluent releases at concentrations higher than the ECL values stated in 10 CFR 20, Appendix B, Table 2, Column 2.

For dissolved or entrained noble gases in liquid radwaste, the ECL is 1E-04 uCi/ml total activity.

For gross alpha in liquid radwaste, the ECL is 2E-09 uCi/ml.

Furthermore, for all the above radionuclides, or categories of radioactivity, the overall ECL fraction is determined in accordance with 10 CFR Part 20, Appendix B.

The method utilizing the ECL fraction to determine release rates and liquid radwaste effluent radiation monitor set points is described in Subsection 1.3 of this report.

1.3 Measurements and Approximations of Total Radioactivity

Prior to the release of any tank containing liquid radwaste, following the required recirculations, samples are collected and analyzed in accordance with the Edwin I. Hatch Nuclear Plant Offsite Dose Calculation Manual (ODCM) Table 2-3. A sample from each tank planned for release is analyzed for principal gamma emitters, I-131, and dissolved and entrained noble gases, by gamma spectroscopy. Monthly and quarterly composites are prepared for analysis by extracting aliquots from each sample taken from the tanks released. Liquid radwaste sample analyses are performed as described in Section 1.3.1.

1.3.1 Total Radioactivity Determination

MEASUREMENT	FREQUENCY	METHOD
1. Gamma Isotopic	Each Batch	Gamma Spectroscopy with computerized data reduction.
2. Dissolved or entrained noble gas	Each Batch	Gamma Spectroscopy with computerized data reduction.
3. Tritium	Monthly Composite	Distillation and liquid scintillation counting
4. Gross Alpha	Monthly Composite	Gas flow proportional counting
5. Sr-89 & Sr-90	Quarterly Composite	Chemical separation and gas flow proportional or scintillation counting
6. Fe-55	Quarterly Composite	Chemical separation and liquid scintillation counting

Gamma isotopic measurements are performed in-house using germanium detectors with a resolution of 2.0 keV or lower. The detectors are shielded by four inches of lead. A liquid radwaste sample is typically counted for 2000 seconds and a peak search of the resulting gamma ray spectrum is performed. Energy and net count data for all significant peaks are determined and a quantitative reduction or MDC calculation is performed to ensure that the MDC's are met for the nuclides specified in the ODCM Chapter 10 (i.e., Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141 and Ce-144). The quantitative calculations, corrections for counting time, decay time, sample volume, sample geometry, detector efficiency, baseline counts, branching ratio and MDC calculations, are made based on the counts at the location in the spectrum where the peak for that radionuclide would be located, if present. Typically achieved liquid effluent sample analyses minimum detectable concentrations are reported in Table 1-4.

Tritium, Gross Alpha, Sr-89, Sr-90 and Fe-55 are, in some cases, analyzed offsite.

The radionuclide concentrations determined by gamma spectroscopic analysis of samples taken from tanks planned for release, in addition to the most current sample analysis results available for tritium, gross alpha, Sr-89, Sr-90 and Fe-55, are used along with the corresponding ECL values to determine the ECL fraction for these tanks. This ECL fraction is then used, with the appropriate safety factors, tolerance factors, and the expected dilution stream flow to calculate maximum permissible release rate and a liquid effluent monitor setpoint. The monitor setpoint is calculated to assure that the limits of the ODCM are not exceeded.

A monitor reading in excess of the calculated setpoint will result in an automatic termination of the liquid radwaste discharge. Liquid effluent discharge is also automatically terminated if the dilution stream flow rate falls below the minimum assured dilution flow rate used in the setpoint calculations and established as a setpoint on the dilution stream flow monitor.

Radionuclide concentrations, safety factors, dilution stream flow rate, and the liquid effluent radiation monitor calibration factor, are entered into the computer and a pre-release printout is generated. If the release is not permissible, appropriate warnings will be displayed on the computer screen. If the release is permissible, it is approved by the Chemistry Foreman on duty. The pertinent information is transferred manually from the prerelease printout to a one-page release permit, which is forwarded to Radwaste Operations. When the release is completed, the release permit is returned from Radwaste Operations to Chemistry with the actual release data provided. These data are input into the computer and a post-release printout is generated. The post release printout contains the actual

release rates, the actual release concentrations and quantities, the actual dilution flow, and the calculated doses to a Member of the Public.

1.3.2 Total Error Estimation

The maximum error associated with volume and flow measurements, based upon plant calibration practice, is estimated to be + or - 10%. The average error associated with counting is estimated to be less than + or - 15%.

1.4 Liquid Effluent Release Data

Regulatory Guide 1.21, Tables 2A and 2B are found in this report as Table 1-1A, for Unit 1, Table 1-1B, for Unit 2 and Table 1-1C, for the site; and Table 1-2A, for Unit 1, 1-2B, for Unit 2, and Table 1-2C, for the site. Typical liquid minimum detectable concentrations (MDC's) used for analyses are found in Table 1-4.

The evaluation for the release of Unit 1 RHR Service Water from 1996: Release of Contaminated Water can be found in Appendix A of this report.

The values for the four categories of Tables 1-1A, and 1-1B, and 1-1C, are calculated and the Tables completed as follows:

1. Fission and activation products - The total release values (not including tritium, gases, and alpha) are comprised of the sum of the measured individual radionuclide activities. This sum is for each batch released to the river for the respective quarter.

2. Tritium - The measured tritium concentrations in the monthly composite samples are used to calculate the total release and average diluted concentration during each period.

3. Dissolved and entrained gases - Concentrations of dissolved and entrained gases in liquid effluents are measured by germanium spectroscopy using a one liter sample from each liquid radwaste batch. The measured concentrations are used to calculate the total release and the average diluted concentration during the period. Radioisotopes of iodine in any form are also determined during the isotopic analysis for each batch; therefore, a separate analysis for possible gaseous forms is not performed because it would not provide additional information.

4. Gross alpha radioactivity - The measured gross alpha concentrations in the monthly composite samples are used to calculate the total release of alpha radioactivity.

1.5 Radiological Impact Due to Liquid Releases

Doses to a Member of the Public due to radioactivity in liquid effluent were calculated in accordance with the Offsite Dose Calculation Manual. Results are presented in Table 1-3A for Unit 1, and 1-3B for Unit 2, for all four quarters.

1.6 Liquid Effluents - Batch Releases

Batch Release information for Units 1 and 2 is summarized in the following tables:

Unit 1 Liquid Batch Releases: Table 1-5A
Unit 2 Liquid Batch Releases: Table 1-5B

1.7 Liquid Effluents - Abnormal Releases

There were no abnormal liquid releases for this reporting period.

TABLE 1-1A
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Liquid Effluents - Summation of All Releases
Unit: 1
Starting : 1-Jan-2001 Ending : 30-Jun-2001

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
A. FISSION & ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CURIES	1.21E-02	4.02E-03	4.70E+01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	4.78E-08	2.90E-08	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
B. TRITIUM				
1. TOTAL RELEASE	CURIES	2.26E+00	1.48E+00	3.70E+01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	8.91E-06	1.07E-05	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CURIES	2.10E-05	0.00E+00	1.00E+02
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	8.27E-11	0.00E+00	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CURIES	1.15E-07	4.65E-08	1.20E+02
E. WASTE VOL RELEASED(PRE-DILUTION)	LITERS	1.17E+06	6.41E+05	1.00E+01
F. VOLUME OF DILUTION WATER USED	LITERS	2.54E+08	1.38E+08	1.60E+02

* Applicable limits are expressed in terms of dose. See Tables 1-3A and 1-3B of this report.

TABLE 1-1A
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Liquid Effluents - Summation of All Releases
Unit: 1
Starting : 1-Jul-2001 Ending : 31-Dec-2001

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
A. FISSION & ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CURIES	5.12E-03	2.92E-03	4.70E+01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	6.35E-09	9.04E-09	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
B. TRITIUM				
1. TOTAL RELEASE	CURIES	6.22E+00	3.19E+00	3.70E+01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	7.71E-06	9.88E-06	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CURIES	2.54E-05	1.82E-06	1.00E+02
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	3.15E-11	5.65E-12	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CURIES	3.85E-08	0.00E+00	1.20E+02
E. WASTE VOL RELEASED(PRE-DILUTION)	LITERS	3.38E+06	1.24E+06	1.00E+01
F. VOLUME OF DILUTION WATER USED	LITERS	8.06E+08	3.23E+08	1.60E+02

* Applicable limits are expressed in terms of dose. See Tables 1-3A and 1-3B of this report.

TABLE 1-1B
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Liquid Effluents - Summation of All Releases
Unit: 2
Starting : 1-Jan-2001 Ending : 30-Jun-2001

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
A. FISSION & ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CURIES	9.90E-04	5.93E-03	4.70E+01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	4.29E-08	1.66E-08	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
B. TRITIUM				
1. TOTAL RELEASE	CURIES	3.59E-01	5.05E+00	3.70E+01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	1.56E-05	1.41E-05	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CURIES	0.00E+00	8.97E-06	1.00E+02
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	0.00E+00	2.50E-11	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CURIES	5.99E-08	4.94E-07	1.20E+02
E. WASTE VOL RELEASED(PRE-DILUTION)	LITERS	1.34E+05	1.93E+06	1.00E+01
F. VOLUME OF DILUTION WATER USED	LITERS	2.31E+07	3.58E+08	1.60E+02

* Applicable limits are expressed in terms of dose. See Tables 1-3A and 1-3B of this report.

TABLE 1-1B
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Liquid Effluents - Summation of All Releases
Unit: 2
Starting : 1-Jul-2001 Ending : 31-Dec-2001

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
A. FISSION & ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CURIES	9.69E-03	6.00E-03	4.70E+01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	2.15E-08	2.01E-08	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
B. TRITIUM				
1. TOTAL RELEASE	CURIES	5.07E+00	3.35E+00	3.70E+01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	1.12E-05	1.13E-05	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CURIES	1.90E-04	1.31E-05	1.00E+02
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	4.22E-10	4.40E-11	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CURIES	4.71E-14	0.00E+00	1.20E+02
E. WASTE VOL RELEASED(PRE-DILUTION)	LITERS	2.32E+06	1.68E+06	1.00E+01
F. VOLUME OF DILUTION WATER USED	LITERS	4.51E+08	2.98E+08	1.60E+02

* Applicable limits are expressed in terms of dose. See Tables 1-3A and 1-3B of this report.

TABLE 1-1C
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Liquid Effluents - Summation of All Releases
Unit: Site
Starting : 1-Jan-2001 Ending : 30-Jun-2001

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
A. FISSION & ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CURIES	1.31E-02	9.95E-03	4.70E+01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	4.74E-08	2.00E-08	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
B. TRITIUM				
1. TOTAL RELEASE	CURIES	2.62E+00	6.53E+00	3.70E+01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	9.46E-06	1.31E-05	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CURIES	2.10E-05	8.97E-06	1.00E+02
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	7.58E-11	1.81E-11	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CURIES	1.75E-07	5.40E-07	1.20E+02
E. WASTE VOL RELEASED(PRE-DILUTION)	LITERS	1.30E+06	2.58E+06	1.00E+01
F. VOLUME OF DILUTION WATER USED	LITERS	2.77E+08	4.97E+08	1.60E+02

* Applicable limits are expressed in terms of dose. See Tables 1-3A and 1-3B of this report.

TABLE 1-1C
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Liquid Effluents - Summation of All Releases
Unit: Site
Starting : 1-Jul-2001 Ending : 31-Dec-2001

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
A. FISSION & ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CURIES	1.48E-02	8.92E-03	4.70E+01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	1.18E-08	1.44E-08	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
B. TRITIUM				
1. TOTAL RELEASE	CURIES	1.13E+01	6.54E+00	3.70E+01
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	8.98E-06	1.05E-05	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CURIES	2.16E-04	1.49E-05	1.00E+02
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	1.72E-10	2.41E-11	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CURIES	3.85E-08	0.00E+00	1.20E+02
E. WASTE VOL RELEASED(PRE-DILUTION)	LITERS	5.70E+06	2.92E+06	1.00E+01
F. VOLUME OF DILUTION WATER USED	LITERS	1.26E+09	6.21E+08	1.60E+02

* Applicable limits are expressed in terms of dose. See Tables 1-3A and 1-3B of this report.

TABLE 1-2A*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Liquid Effluents
Unit: 1
Starting : 1-Jan-2001 Ending : 30-Jun-2001

		CONTINUOUS MODE**		BATCH MODE	
NUCLIDE	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
H-3	CURIES	0.00E+00	0.00E+00	2.26E+00	1.48E+00
FISSION & ACTIVATION PRODUCTS					
AU-199	CURIES	0.00E+00	0.00E+00	1.32E-06	0.00E+00
CO-58	CURIES	0.00E+00	0.00E+00	6.13E-05	1.39E-05
CO-60	CURIES	0.00E+00	0.00E+00	2.48E-03	1.72E-03
CR-51	CURIES	0.00E+00	0.00E+00	0.00E+00	3.13E-05
CS-137	CURIES	0.00E+00	0.00E+00	8.27E-04	2.75E-04
FE-55	CURIES	0.00E+00	0.00E+00	4.94E-03	2.81E-04
I-131	CURIES	0.00E+00	0.00E+00	4.32E-06	0.00E+00
MN-54	CURIES	0.00E+00	0.00E+00	1.58E-03	9.15E-04
NA-24	CURIES	0.00E+00	0.00E+00	1.88E-04	2.64E-05
NB-97	CURIES	0.00E+00	0.00E+00	6.96E-06	4.96E-06
SN-113	CURIES	0.00E+00	0.00E+00	8.70E-07	2.59E-06
SR-89	CURIES	0.00E+00	0.00E+00	9.82E-05	1.22E-05
ZN-65	CURIES	0.00E+00	0.00E+00	1.93E-03	7.37E-04
ZN-69M	CURIES	0.00E+00	0.00E+00	2.30E-06	0.00E+00
TOTALS	CURIES	0.00E+00	0.00E+00	1.21E-02	4.02E-03
DISSOLVED AND ENTRAINED GASES					
XE-133	CURIES	0.00E+00	0.00E+00	9.12E-06	0.00E+00
XE-135	CURIES	0.00E+00	0.00E+00	1.19E-05	0.00E+00
TOTALS	CURIES	0.00E+00	0.00E+00	2.10E-05	0.00E+00
G-ALPHA	CURIES	0.00E+00	0.00E+00	1.15E-07	4.65E-08

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 1-4 for typical minimum detectable concentrations.

** There are no continuous mode radioactive liquid release pathways at Plant Hatch.

TABLE 1-2A*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Liquid Effluents
Unit: 1
Starting : 1-Jul-2001 Ending : 31-Dec-2001

		CONTINUOUS MODE**		BATCH MODE	
NUCLIDE	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
H-3	CURIES	0.00E+00	0.00E+00	6.22E+00	3.19E+00
FISSION & ACTIVATION PRODUCTS					
AG-110M	CURIES	0.00E+00	0.00E+00	1.56E-05	0.00E+00
AS-76	CURIES	0.00E+00	0.00E+00	3.58E-06	0.00E+00
CE-141	CURIES	0.00E+00	0.00E+00	5.25E-06	0.00E+00
CO-58	CURIES	0.00E+00	0.00E+00	2.04E-06	2.52E-05
CO-60	CURIES	0.00E+00	0.00E+00	2.20E-03	7.32E-04
CR-51	CURIES	0.00E+00	0.00E+00	0.00E+00	1.41E-04
CS-137	CURIES	0.00E+00	0.00E+00	2.75E-04	3.67E-04
CS-138	CURIES	0.00E+00	0.00E+00	1.31E-04	1.19E-04
FE-55	CURIES	0.00E+00	0.00E+00	8.24E-04	4.92E-04
FE-59	CURIES	0.00E+00	0.00E+00	0.00E+00	1.45E-05
I-131	CURIES	0.00E+00	0.00E+00	5.51E-06	3.98E-06
MN-54	CURIES	0.00E+00	0.00E+00	8.73E-04	5.02E-04
NA-24	CURIES	0.00E+00	0.00E+00	9.62E-05	2.79E-05
NB-95	CURIES	0.00E+00	0.00E+00	7.25E-07	2.76E-06
NB-97	CURIES	0.00E+00	0.00E+00	3.98E-06	1.87E-06
SR-89	CURIES	0.00E+00	0.00E+00	5.61E-06	1.70E-05
SR-92	CURIES	0.00E+00	0.00E+00	9.44E-07	0.00E+00
ZN-65	CURIES	0.00E+00	0.00E+00	6.75E-04	4.70E-04
ZN-69M	CURIES	0.00E+00	0.00E+00	0.00E+00	3.30E-06
TOTALS	CURIES	0.00E+00	0.00E+00	5.12E-03	2.92E-03
DISSOLVED AND ENTRAINED GASES					
XE-133	CURIES	0.00E+00	0.00E+00	1.96E-05	0.00E+00
XE-135	CURIES	0.00E+00	0.00E+00	5.78E-06	1.82E-06
TOTALS	CURIES	0.00E+00	0.00E+00	2.54E-05	1.82E-06
G-ALPHA	CURIES	0.00E+00	0.00E+00	3.85E-08	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 1-4 for typical minimum detectable concentrations.

** There are no continuous mode radioactive liquid release pathways at Plant Hatch.

TABLE 1-2B*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Liquid Effluents
Unit: 2
Starting : 1-Jan-2001 Ending : 30-Jun-2001

		CONTINUOUS MODE**		BATCH MODE	
NUCLIDE	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
H-3	CURIES	0.00E+00	0.00E+00	3.59E-01	5.05E+00
FISSION & ACTIVATION PRODUCTS					
AG-110M	CURIES	0.00E+00	0.00E+00	0.00E+00	3.92E-05
CO-58	CURIES	0.00E+00	0.00E+00	0.00E+00	1.43E-05
CO-60	CURIES	0.00E+00	0.00E+00	1.13E-04	2.83E-04
CS-137	CURIES	0.00E+00	0.00E+00	9.55E-05	1.35E-04
FE-55	CURIES	0.00E+00	0.00E+00	6.21E-04	4.88E-03
MN-54	CURIES	0.00E+00	0.00E+00	8.98E-05	1.66E-04
MN-56	CURIES	0.00E+00	0.00E+00	0.00E+00	3.09E-05
NA-24	CURIES	0.00E+00	0.00E+00	0.00E+00	1.73E-06
NB-97	CURIES	0.00E+00	0.00E+00	0.00E+00	1.54E-04
SR-89	CURIES	0.00E+00	0.00E+00	1.61E-05	1.99E-05
SR-90	CURIES	0.00E+00	0.00E+00	5.29E-07	1.11E-08
SR-92	CURIES	0.00E+00	0.00E+00	0.00E+00	2.80E-05
Y-91M	CURIES	0.00E+00	0.00E+00	0.00E+00	3.72E-05
ZN-65	CURIES	0.00E+00	0.00E+00	5.41E-05	1.38E-04
ZN-69M	CURIES	0.00E+00	0.00E+00	0.00E+00	6.91E-06
TOTALS	CURIES	0.00E+00	0.00E+00	9.90E-04	5.93E-03
DISSOLVED AND ENTRAINED GASES					
XE-135	CURIES	0.00E+00	0.00E+00	0.00E+00	8.97E-06
TOTALS	CURIES	0.00E+00	0.00E+00	0.00E+00	8.97E-06
G-ALPHA	CURIES	0.00E+00	0.00E+00	5.99E-08	4.94E-07

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 1-4 for typical minimum detectable concentrations.

** There are no continuous mode radioactive liquid release pathways at Plant Hatch.

TABLE 1-2B*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Liquid Effluents
Unit: 2
Starting : 1-Jul-2001 Ending : 31-Dec-2001

		CONTINUOUS MODE**		BATCH MODE	
NUCLIDE	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
H-3	CURIES	0.00E+00	0.00E+00	5.07E+00	3.35E+00
FISSION & ACTIVATION PRODUCTS					
AG-110M	CURIES	0.00E+00	0.00E+00	0.00E+00	3.76E-05
AS-76	CURIES	0.00E+00	0.00E+00	7.91E-06	0.00E+00
CE-141	CURIES	0.00E+00	0.00E+00	7.66E-06	0.00E+00
CO-58	CURIES	0.00E+00	0.00E+00	3.91E-05	1.03E-04
CO-60	CURIES	0.00E+00	0.00E+00	1.43E-03	7.90E-04
CR-51	CURIES	0.00E+00	0.00E+00	4.39E-04	2.98E-04
CS-134	CURIES	0.00E+00	0.00E+00	2.28E-06	0.00E+00
CS-137	CURIES	0.00E+00	0.00E+00	2.17E-04	1.13E-04
CS-138	CURIES	0.00E+00	0.00E+00	7.17E-05	0.00E+00
FE-55	CURIES	0.00E+00	0.00E+00	2.41E-03	2.83E-04
FE-59	CURIES	0.00E+00	0.00E+00	1.72E-05	2.89E-05
I-131	CURIES	0.00E+00	0.00E+00	4.40E-06	0.00E+00
I-133	CURIES	0.00E+00	0.00E+00	3.92E-06	0.00E+00
MN-54	CURIES	0.00E+00	0.00E+00	4.47E-03	1.92E-03
NA-24	CURIES	0.00E+00	0.00E+00	3.65E-06	0.00E+00
NB-97	CURIES	0.00E+00	0.00E+00	0.00E+00	1.86E-05
SB-122	CURIES	0.00E+00	0.00E+00	0.00E+00	1.25E-06
SB-124	CURIES	0.00E+00	0.00E+00	5.10E-06	6.34E-05
SR-89	CURIES	0.00E+00	0.00E+00	2.78E-05	1.90E-05
SR-90	CURIES	0.00E+00	0.00E+00	3.82E-06	7.99E-14
SR-91	CURIES	0.00E+00	0.00E+00	8.59E-06	0.00E+00
SR-92	CURIES	0.00E+00	0.00E+00	0.00E+00	7.52E-07
TC-99M	CURIES	0.00E+00	0.00E+00	5.53E-06	0.00E+00
Y-91M	CURIES	0.00E+00	0.00E+00	9.45E-06	0.00E+00
ZN-65	CURIES	0.00E+00	0.00E+00	4.90E-04	2.32E-03
ZN-69M	CURIES	0.00E+00	0.00E+00	1.60E-05	0.00E+00
TOTALS	CURIES	0.00E+00	0.00E+00	9.69E-03	6.00E-03
DISSOLVED AND ENTRAINED GASES					
AR-41	CURIES	0.00E+00	0.00E+00	4.05E-06	0.00E+00

TABLE 1-2B*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Liquid Effluents
Unit: 2
Starting : 1-Jul-2001 Ending : 31-Dec-2001

		CONTINUOUS MODE**		BATCH MODE	
NUCLIDE	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
DISSOLVED AND ENTRAINED GASES					
XE-133	CURIES	0.00E+00	0.00E+00	1.45E-04	0.00E+00
XE-133M	CURIES	0.00E+00	0.00E+00	6.62E-06	0.00E+00
XE-135	CURIES	0.00E+00	0.00E+00	3.52E-05	1.31E-05
TOTALS	CURIES	0.00E+00	0.00E+00	1.90E-04	1.31E-05
G-ALPHA	CURIES	0.00E+00	0.00E+00	4.71E-14	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 1-4 for typical minimum detectable concentrations.

** There are no continuous mode radioactive liquid release pathways at Plant Hatch.

TABLE 1-2C*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Liquid Effluents
Unit: Site
Starting : 1-Jan-2001 Ending : 30-Jun-2001

		CONTINUOUS MODE**		BATCH MODE	
NUCLIDE	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
H-3	CURIES	0.00E+00	0.00E+00	2.62E+00	6.53E+00
FISSION & ACTIVATION PRODUCTS					
AG-110M	CURIES	0.00E+00	0.00E+00	0.00E+00	3.92E-05
AU-199	CURIES	0.00E+00	0.00E+00	1.32E-06	0.00E+00
CO-58	CURIES	0.00E+00	0.00E+00	6.13E-05	2.81E-05
CO-60	CURIES	0.00E+00	0.00E+00	2.59E-03	2.00E-03
CR-51	CURIES	0.00E+00	0.00E+00	0.00E+00	3.13E-05
CS-137	CURIES	0.00E+00	0.00E+00	9.22E-04	4.10E-04
FE-55	CURIES	0.00E+00	0.00E+00	5.56E-03	5.16E-03
I-131	CURIES	0.00E+00	0.00E+00	4.32E-06	0.00E+00
MN-54	CURIES	0.00E+00	0.00E+00	1.67E-03	1.08E-03
MN-56	CURIES	0.00E+00	0.00E+00	0.00E+00	3.09E-05
NA-24	CURIES	0.00E+00	0.00E+00	1.88E-04	2.81E-05
NB-97	CURIES	0.00E+00	0.00E+00	6.96E-06	1.59E-04
SN-113	CURIES	0.00E+00	0.00E+00	8.70E-07	2.59E-06
SR-89	CURIES	0.00E+00	0.00E+00	1.14E-04	3.21E-05
SR-90	CURIES	0.00E+00	0.00E+00	5.29E-07	1.11E-08
SR-92	CURIES	0.00E+00	0.00E+00	0.00E+00	2.80E-05
Y-91M	CURIES	0.00E+00	0.00E+00	0.00E+00	3.72E-05
ZN-65	CURIES	0.00E+00	0.00E+00	1.98E-03	8.76E-04
ZN-69M	CURIES	0.00E+00	0.00E+00	2.30E-06	6.91E-06
TOTALS	CURIES	0.00E+00	0.00E+00	1.31E-02	9.95E-03
DISSOLVED AND ENTRAINED GASES					
XE-133	CURIES	0.00E+00	0.00E+00	9.12E-06	0.00E+00
XE-135	CURIES	0.00E+00	0.00E+00	1.19E-05	8.97E-06
TOTALS	CURIES	0.00E+00	0.00E+00	2.10E-05	8.97E-06
G-ALPHA	CURIES	0.00E+00	0.00E+00	1.75E-07	5.40E-07

TABLE 1-2C*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Liquid Effluents
Unit: Site
Starting : 1-Jan-2001 Ending : 30-Jun-2001

		CONTINUOUS MODE**		BATCH MODE	
NUCLIDE	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 1-4 for typical minimum detectable concentrations.

** There are no continuous mode radioactive liquid release pathways at Plant Hatch.

TABLE 1-2C*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Liquid Effluents
Unit: Site
Starting : 1-Jul-2001 Ending : 31-Dec-2001

		CONTINUOUS MODE**		BATCH MODE	
NUCLIDE	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
H-3	CURIES	0.00E+00	0.00E+00	1.13E+01	6.54E+00
FISSION & ACTIVATION PRODUCTS					
AG-110M	CURIES	0.00E+00	0.00E+00	1.56E-05	3.76E-05
AS-76	CURIES	0.00E+00	0.00E+00	1.15E-05	0.00E+00
CE-141	CURIES	0.00E+00	0.00E+00	1.29E-05	0.00E+00
CO-58	CURIES	0.00E+00	0.00E+00	4.11E-05	1.28E-04
CO-60	CURIES	0.00E+00	0.00E+00	3.64E-03	1.52E-03
CR-51	CURIES	0.00E+00	0.00E+00	4.39E-04	4.39E-04
CS-134	CURIES	0.00E+00	0.00E+00	2.28E-06	0.00E+00
CS-137	CURIES	0.00E+00	0.00E+00	4.93E-04	4.79E-04
CS-138	CURIES	0.00E+00	0.00E+00	2.03E-04	1.19E-04
FE-55	CURIES	0.00E+00	0.00E+00	3.23E-03	7.75E-04
FE-59	CURIES	0.00E+00	0.00E+00	1.72E-05	4.33E-05
I-131	CURIES	0.00E+00	0.00E+00	9.91E-06	3.98E-06
I-133	CURIES	0.00E+00	0.00E+00	3.92E-06	0.00E+00
MN-54	CURIES	0.00E+00	0.00E+00	5.34E-03	2.42E-03
NA-24	CURIES	0.00E+00	0.00E+00	9.99E-05	2.79E-05
NB-95	CURIES	0.00E+00	0.00E+00	7.25E-07	2.76E-06
NB-97	CURIES	0.00E+00	0.00E+00	3.98E-06	2.05E-05
SB-122	CURIES	0.00E+00	0.00E+00	0.00E+00	1.25E-06
SB-124	CURIES	0.00E+00	0.00E+00	5.10E-06	6.34E-05
SR-89	CURIES	0.00E+00	0.00E+00	3.34E-05	3.60E-05
SR-90	CURIES	0.00E+00	0.00E+00	3.82E-06	7.99E-14
SR-91	CURIES	0.00E+00	0.00E+00	8.59E-06	0.00E+00
SR-92	CURIES	0.00E+00	0.00E+00	9.44E-07	7.52E-07
TC-99M	CURIES	0.00E+00	0.00E+00	5.53E-06	0.00E+00
Y-91M	CURIES	0.00E+00	0.00E+00	9.45E-06	0.00E+00
ZN-65	CURIES	0.00E+00	0.00E+00	1.17E-03	2.79E-03
ZN-69M	CURIES	0.00E+00	0.00E+00	1.60E-05	3.30E-06
TOTALS	CURIES	0.00E+00	0.00E+00	1.48E-02	8.92E-03
DISSOLVED AND ENTRAINED GASES					
AR-41	CURIES	0.00E+00	0.00E+00	4.05E-06	0.00E+00

TABLE 1-2C*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Liquid Effluents
Unit: Site
Starting : 1-Jul-2001 Ending : 31-Dec-2001

		CONTINUOUS MODE**		BATCH MODE	
NUCLIDE	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
DISSOLVED AND ENTRAINED GASES					
XE-133	CURIES	0.00E+00	0.00E+00	1.64E-04	0.00E+00
XE-133M	CURIES	0.00E+00	0.00E+00	6.62E-06	0.00E+00
XE-135	CURIES	0.00E+00	0.00E+00	4.10E-05	1.49E-05
TOTALS	CURIES	0.00E+00	0.00E+00	2.16E-04	1.49E-05
G-ALPHA	CURIES	0.00E+00	0.00E+00	3.85E-08	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 1-4 for typical minimum detectable concentrations.

** There are no continuous mode radioactive liquid release pathways at Plant Hatch.

TABLE 1-3A
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSES TO A MEMBER OF THE PUBLIC DUE TO LIQUID RELEASES
Unit: 1
Starting: 01-Jan-2001 Ending: 30-Jun-2001

Cumulative Doses per Quarter

Organ	ODCM Limit	Units	Quarter 1	% of ODCM Limit	Quarter 2	% of ODCM Limit
Bone	5.0	mrem	3.23E-03	6.45E-02	1.04E-03	2.09E-02
Liver	5.0	mrem	4.90E-03	9.80E-02	1.65E-03	3.31E-02
TBody	1.5	mrem	3.17E-03	2.11E-01	1.10E-03	7.31E-02
Thyroid	5.0	mrem	4.41E-05	8.81E-04	1.07E-05	2.14E-04
Kidney	5.0	mrem	1.86E-03	3.72E-02	6.33E-04	1.27E-02
Lung	5.0	mrem	4.84E-04	9.67E-03	1.60E-04	3.19E-03
GILLI	5.0	mrem	1.95E-03	3.90E-02	1.17E-03	2.33E-02

Cumulative Doses per Year

Organ	ODCM Limit	Units	Year to Ending Date	% of ODCM Limit
Bone	10.0	mrem	4.27E-03	4.27E-02
Liver	10.0	mrem	6.55E-03	6.55E-02
TBody	3.0	mrem	4.26E-03	1.42E-01
Thyroid	10.0	mrem	5.48E-05	5.48E-04
Kidney	10.0	mrem	2.49E-03	2.49E-02
Lung	10.0	mrem	6.43E-04	6.43E-03
GILLI	10.0	mrem	3.12E-03	3.12E-02

TABLE 1-3A
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSES TO A MEMBER OF THE PUBLIC DUE TO LIQUID RELEASES
Unit: 1
Starting: 01-Jul-2001 Ending: 31-Dec-2001

Cumulative Doses per Quarter

Organ	ODCM Limit	Units	Quarter 3	% of ODCM Limit	Quarter 4	% of ODCM Limit
Bone	5.0	mrem	9.75E-04	1.95E-02	1.10E-03	2.20E-02
Liver	5.0	mrem	1.58E-03	3.15E-02	1.65E-03	3.29E-02
TBody	1.5	mrem	1.08E-03	7.20E-02	1.08E-03	7.18E-02
Thyroid	5.0	mrem	7.17E-05	1.43E-03	4.51E-05	9.01E-04
Kidney	5.0	mrem	6.13E-04	1.23E-02	6.15E-04	1.23E-02
Lung	5.0	mrem	1.82E-04	3.64E-03	1.85E-04	3.69E-03
GILLI	5.0	mrem	1.36E-03	2.73E-02	5.47E-04	1.09E-02

Cumulative Doses per Year

Organ	ODCM Limit	Units	Year to Ending Date	% of ODCM Limit
Bone	10.0	mrem	6.35E-03	6.35E-02
Liver	10.0	mrem	9.77E-03	9.77E-02
TBody	3.0	mrem	6.42E-03	2.14E-01
Thyroid	10.0	mrem	1.72E-04	1.72E-03
Kidney	10.0	mrem	3.72E-03	3.72E-02
Lung	10.0	mrem	1.01E-03	1.01E-02
GILLI	10.0	mrem	5.03E-03	5.03E-02

TABLE 1-3B
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSES TO A MEMBER OF THE PUBLIC DUE TO LIQUID RELEASES
Unit: 2
Starting: 01-Jan-2001 Ending: 30-Jun-2001

Cumulative Doses per Quarter

Organ	ODCM Limit	Units	Quarter 1	% of ODCM Limit	Quarter 2	% of ODCM Limit
Bone	5.0	mrem	3.78E-04	7.55E-03	5.65E-04	1.13E-02
Liver	5.0	mrem	5.32E-04	1.06E-02	8.46E-04	1.69E-02
TBody	1.5	mrem	3.50E-04	2.33E-02	5.66E-04	3.77E-02
Thyroid	5.0	mrem	2.91E-06	5.81E-05	3.83E-05	7.65E-04
Kidney	5.0	mrem	1.88E-04	3.75E-03	3.26E-04	6.51E-03
Lung	5.0	mrem	5.98E-05	1.20E-03	1.24E-04	2.48E-03
GILLI	5.0	mrem	1.00E-04	2.01E-03	3.31E-04	6.62E-03

Cumulative Doses per Year

Organ	ODCM Limit	Units	Year to Ending Date	% of ODCM Limit
Bone	10.0	mrem	9.43E-04	9.43E-03
Liver	10.0	mrem	1.38E-03	1.38E-02
TBody	3.0	mrem	9.16E-04	3.05E-02
Thyroid	10.0	mrem	4.12E-05	4.12E-04
Kidney	10.0	mrem	5.13E-04	5.13E-03
Lung	10.0	mrem	1.84E-04	1.84E-03
GILLI	10.0	mrem	4.31E-04	4.31E-03

TABLE 1-3B
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSES TO A MEMBER OF THE PUBLIC DUE TO LIQUID RELEASES
Unit: 2
Starting: 01-Jul-2001 Ending: 31-Dec-2001

Cumulative Doses per Quarter

Organ	ODCM Limit	Units	Quarter 3	% of ODCM Limit	Quarter 4	% of ODCM Limit
Bone	5.0	mrem	9.06E-04	1.81E-02	6.94E-04	1.39E-02
Liver	5.0	mrem	1.55E-03	3.10E-02	1.54E-03	3.08E-02
TBody	1.5	mrem	9.95E-04	6.63E-02	8.55E-04	5.70E-02
Thyroid	5.0	mrem	7.04E-05	1.41E-03	2.60E-05	5.20E-04
Kidney	5.0	mrem	5.91E-04	1.18E-02	8.06E-04	1.61E-02
Lung	5.0	mrem	1.68E-04	3.35E-03	9.21E-05	1.84E-03
GILLI	5.0	mrem	1.44E-03	2.88E-02	1.28E-03	2.56E-02

Cumulative Doses per Year

Organ	ODCM Limit Limit	Units	Year to Ending Date	% of ODCM Limit
Bone	10.0	mrem	2.54E-03	2.54E-02
Liver	10.0	mrem	4.47E-03	4.47E-02
TBody	3.0	mrem	2.77E-03	9.22E-02
Thyroid	10.0	mrem	1.38E-04	1.38E-03
Kidney	10.0	mrem	1.91E-03	1.91E-02
Lung	10.0	mrem	4.43E-04	4.43E-03
GILLI	10.0	mrem	3.15E-03	3.15E-02

Table 1-4
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
MINIMUM DETECTABLE CONCENTRATIONS - LIQUID SAMPLE ANALYSES
STARTING: 1-Jan-2001 ENDING: 31-Dec-2001

The values in this table represent a priori Minimum Detectable Concentrations (MDC) that are typically achieved in laboratory analyses of liquid radwaste samples.

RADIONUCLIDE	*MDC*	*UNITS*
Mn-54	1.97E-08	uCi/ml
Fe-59	3.94E-08	uCi/ml
Co-58	1.59E-08	uCi/ml
Co-60	1.72E-08	uCi/ml
Zn-65	2.92E-08	uCi/ml
Mo-99	1.20E-07	uCi/ml
Cs-134	1.75E-08	uCi/ml
Cs-137	1.62E-08	uCi/ml
Ce-141	1.92E-08	uCi/ml
Ce-144	8.83E-08	uCi/ml
I-131	1.43E-08	uCi/ml
Xe-135	1.03E-08	uCi/ml
Fe-55	2.34E-08	uCi/ml
Sr-89	1.44E-08	uCi/ml
Sr-90	8.50E-09	uCi/ml
H-3	6.00E-07	uCi/ml

Table 1-5A
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
LIQUID EFFLUENTS - BATCH RELEASE SUMMARY
UNIT 1

STARTING: 1-Jan-2001 *ENDING: 30-Jun-2001*

NUMBER OF RELEASES	:	54	
TOTAL TIME FOR ALL RELEASES	:	7439.00	MINUTES
MAXIMUM TIME FOR A RELEASE	:	198.00	MINUTES
AVERAGE TIME FOR A RELEASE	:	137.76	MINUTES
MINIMUM TIME FOR A RELEASE	:	81.00	MINUTES
AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF LIQUID EFFLUENT INTO A FLOWING STREAM	:	4892	CFS

Table 1-5A
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
LIQUID EFFLUENTS - BATCH RELEASE SUMMARY
UNIT 1

STARTING: 1-Jul-2001 *ENDING: 31-Dec-2001*

NUMBER OF RELEASES	:	145	
TOTAL TIME FOR ALL RELEASES	:	19006.10	MINUTES
MAXIMUM TIME FOR A RELEASE	:	197.00	MINUTES
AVERAGE TIME FOR A RELEASE	:	131.08	MINUTES
MINIMUM TIME FOR A RELEASE	:	90.00	MINUTES
AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF LIQUID EFFLUENT INTO A FLOWING STREAM	:	4892	CFS

Table 1-6A
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
LIQUID EFFLUENTS - ABNORMAL RELEASE SUMMARY
UNIT 1
STARTING: 1-Jan-2001 *ENDING: 30-Jun-2001*

NUMBER OF RELEASES	:	0	
TOTAL TIME FOR ALL RELEASES	:	0	MINUTES
MAXIMUM TIME FOR A RELEASE	:	0	MINUTES
AVERAGE TIME FOR A RELEASE	:	0	MINUTES
MINIMUM TIME FOR A RELEASE	:	0	MINUTES
TOTAL ACTIVITY FOR ALL RELEASES	:	0.00E+00	CURIES

There were no abnormal liquid releases for this reporting period.

Table 1-6A
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
LIQUID EFFLUENTS - ABNORMAL RELEASE SUMMARY
UNIT 1
STARTING: 1-Jul-2001 *ENDING: 31-Dec-2001*

NUMBER OF RELEASES	:	0	
TOTAL TIME FOR ALL RELEASES	:	0	MINUTES
MAXIMUM TIME FOR A RELEASE	:	0	MINUTES
AVERAGE TIME FOR A RELEASE	:	0	MINUTES
MINIMUM TIME FOR A RELEASE	:	0	MINUTES
TOTAL ACTIVITY FOR ALL RELEASES	:	0.00E+00	CURIES

There were no abnormal liquid releases for this reporting period.

Table 1-6B
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
LIQUID EFFLUENTS - ABNORMAL RELEASE SUMMARY
UNIT 2
STARTING: 1-Jan-2001 ***ENDING: 30-Jun-2001***

NUMBER OF RELEASES	:	0	
TOTAL TIME FOR ALL RELEASES	:	0	MINUTES
MAXIMUM TIME FOR A RELEASE	:	0	MINUTES
AVERAGE TIME FOR A RELEASE	:	0	MINUTES
MINIMUM TIME FOR A RELEASE	:	0	MINUTES
TOTAL ACTIVITY FOR ALL RELEASES	:	0.00E+00	CURIES

There were no abnormal liquid releases for this reporting period.

Table 1-6B
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
LIQUID EFFLUENTS - ABNORMAL RELEASE SUMMARY
UNIT 2
STARTING: 1-Jul-2001 ***ENDING: 31-Dec-2001***

NUMBER OF RELEASES	:	0	
TOTAL TIME FOR ALL RELEASES	:	0	MINUTES
MAXIMUM TIME FOR A RELEASE	:	0	MINUTES
AVERAGE TIME FOR A RELEASE	:	0	MINUTES
MINIMUM TIME FOR A RELEASE	:	0	MINUTES
TOTAL ACTIVITY FOR ALL RELEASES	:	0.00E+00	CURIES

There were no abnormal liquid releases for this reporting period.

2.0 *Gaseous Effluents*

2.1 Regulatory Requirements

The ODCM Specifications presented in this section are for Unit 1 and Unit 2.

2.1.1 Dose Rate Limits

The dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the SITE BOUNDARY shall be limited to the following:

a. For noble gases: Less than or equal to 500 mrems/yr. to the whole body and less than or equal to 3000 mrems/yr. to the skin and,

b. For Iodine-131, Iodine-133, tritium and for all radionuclides in particulate form with half lives greater than 8 days: Less than or equal to 1500 mrems/yr. to any organ.

2.1.2 Air Doses Due To Noble Gases in Gaseous Effluents

The air dose due to noble gases released in gaseous effluents, from each unit, to areas at and beyond the SITE BOUNDARY, shall be limited to the following:

a. During any calendar quarter: Less than or equal to 5 mrads for gamma radiation and less than or equal to 10 mrads for beta radiation, and

b. During any calendar year: Less than or equal to 10 mrads for gamma radiation and less than or equal to 20 mrads for beta radiation.

2.1.3 Doses To A Member of the Public

The dose to a MEMBER OF THE PUBLIC from Iodine-131, Iodine-133, tritium and all radionuclides in particulate form with half-lives greater than 8 days, in gaseous effluents released from each unit, to areas at and beyond the SITE BOUNDARY, shall be limited to the following.

a. During any calendar quarter: Less than or equal to 7.5 mrems to any organ.

b. During any calendar year: Less than or equal to 15 mrems to any organ.

2.2 *Measurements and Approximations of Total Radioactivity*

Waste gas release at Plant Hatch is confined to four paths: main stack (also called the offgas vent), Unit 1 reactor building vent; Unit 2 reactor building vent, and the recombiner building vent. Each of these four paths is continuously monitored for gaseous radioactivity.

2.2.1 *Sample Collection and Analysis*

Each of the four gaseous effluent paths is equipped with an integrating-type sample collection device for collecting particulates and iodines. Unless required more frequently under certain circumstances, samples are collected as follows:

1. Noble gas samples are collected by grab sampling monthly.

2. Tritium samples are collected by grab sampling monthly.

3. Radioiodine samples are collected by pulling the sample stream through a charcoal cartridge over a 7-day period.

4. Particulates are collected by pulling the sample stream through a particulate filter over a 7-day period.

5. The 7-day particulate filters above are analyzed for gross alpha activity.

6. Quarterly composite samples are prepared from the particulate filters collected over the previous quarter and the samples are analyzed for Sr-89 and Sr-90.

Sample analyses results and release flow rates from the four release points form the basis for calculating released quantities of radionuclide-specific radioactivity, the dose rates associated with gaseous releases, and the cumulative doses for the current quarter and year. This task is normally performed with computer assistance.

The noble gas grab sample analysis results are used along with maximum expected release flow rates from each of the four vents to calculate monitor setpoints for the gaseous effluent monitors serving the four release points. Calculation of monitor setpoints is described in the ODCM. Typically achieved minimum detectable concentrations for gaseous effluents sample and analyses are reported in Table 2-6.

For each release period, released radioactivity, dose rates, and cumulative doses are calculated. Cumulative dose results are tabulated along with the percent of the ODCM limit for each release, for the current quarter and year.

2.2.2 Total Quantities of Radioactivity, Dose Rates, and Cumulative Doses

The methods for determining release quantities of radioactivity, dose rates, and cumulative doses follow:

2.2.2.1 Fission and Activation Gases

The released radioactivity is determined using sample analyses results collected as described above and the average release flow rates over the period represented by the collected sample.

Dose rates due to noble gases, radioiodines, tritium, and particulates are calculated (with computer assistance). The calculated dose rates are compared to the dose rate limits specified in ODCM 3.1.2 for noble gases, radioiodine, tritium, and particulates. Dose rate calculation methodology is presented in the ODCM.

Beta and gamma air doses due to noble gases are calculated for the location in the unrestricted area with the potential for the highest exposure due to gaseous releases. Air doses are calculated for each release period and cumulative totals are kept for each unit for the calendar quarter and year. Cumulative air doses are compared to the dose limits specified in ODCM 3.1.3. The current percent of the ODCM limits are shown on the printout for each release period. Air dose calculation methodology is presented in the ODCM.

2.2.2.2 Radioiodine, Tritium and Particulate Releases

Released quantities of radioiodines are determined using the weekly samples and release flow rates for the four release points. Radioiodine concentrations are determined by gamma spectroscopy.

Release quantities of particulates are determined using the weekly (filter) samples and release flow rates for the four release points. Gamma spectroscopy is used to quantify concentrations of principal gamma emitters.

After each quarter, the particulate filters from each vent are combined, fused, and a strontium separation is performed. Since sample flows and vent flows are almost constant over each quarterly period the filters from each vent can be dissolved together. Decay corrections are performed back to the middle of the quarterly collection period. If Sr-89 or Sr-90 is not detected, MDC's are calculated. Strontium concentrations are input into the composite file of the computer and used for release dose rate and dose calculations for a Member of the Public.

Tritium samples are obtained monthly from each vent by passing the sample stream through a cold trap. The grams of water vapor/cubic foot is measured upstream of the cold trap in order to alleviate the difficulties in determining water vapor collection efficiencies. The tritium samples are analyzed by an independent laboratory and the results are furnished in uCi/ml of water. The tritium concentration in water is converted to the tritium concentration in air and this value is input into the composite file of the computer and used in release, dose rate, and individual dose calculations.

Dose rates due to radioiodine, tritium and particulates are calculated for a hypothetical child exposed to the inhalation pathway at the location in the unrestricted area where the potential dose rate is expected to be the highest. Dose rates are calculated, for each release point for each release period, and the dose rates from each release point are compared to the dose rate limits as described in ODCM 3.1.2 Doses due to radioiodine, tritium and particulates are calculated for the controlling receptor, which is described in the ODCM. Doses to a Member of the Public are calculated for each release period, and cumulative totals are kept for each unit, for the current calendar quarter and year. Cumulative doses are compared to the dose limits specified in ODCM 3.1.4. The current percent of ODCM limits are shown on the printout for each release period.

2.2.2.3 Gross Alpha Release

The gross alpha release is computed each month by counting the particulate filters, for each week for gross alpha activity in a proportional counter. The four or five weeks' numbers are then recorded on a data sheet and the activity is summed at the end of the month. The summed activity is then divided by the total monthly volume to determine the concentration. This concentration is input into the composite file of the computer and used for release calculations.

2.2.3 Total Error Estimation

The total or maximum error associated with the effluent measurement will include the cumulative errors resulting from the total process of sampling and measurement. Due to the difficulty with assigning error terms for each parameter affecting the final measurement, detailed statistical evaluation of error is not suggested. The objective is to obtain an overall estimate of the error associated with measurements of radioactive materials released in liquid and gaseous effluents and solid waste.

Estimated errors are associated with counting equipment calibration, counting statistics, vent-flow rates, vent sample flow rates, non steady release rates, chemical yield factors and sample losses for such items as charcoal cartridges.

Table 1-5B
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
LIQUID EFFLUENTS - BATCH RELEASE SUMMARY
UNIT 2
STARTING: 1-Jan-2001 *ENDING: 30-Jun-2001*

NUMBER OF RELEASES	:	72	
TOTAL TIME FOR ALL RELEASES	:	7672.00	MINUTES
MAXIMUM TIME FOR A RELEASE	:	146.00	MINUTES
AVERAGE TIME FOR A RELEASE	:	106.56	MINUTES
MINIMUM TIME FOR A RELEASE	:	80.00	MINUTES
AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF LIQUID EFFLUENT INTO A FLOWING STREAM	:	4892	CFS

Table 1-5B
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
LIQUID EFFLUENTS - BATCH RELEASE SUMMARY
UNIT 2
STARTING: 1-Jul-2001 *ENDING: 31-Dec-2001*

NUMBER OF RELEASES	:	142	
TOTAL TIME FOR ALL RELEASES	:	14846.00	MINUTES
MAXIMUM TIME FOR A RELEASE	:	145.00	MINUTES
AVERAGE TIME FOR A RELEASE	:	104.55	MINUTES
MINIMUM TIME FOR A RELEASE	:	15.00	MINUTES
AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF LIQUID EFFLUENT INTO A FLOWING STREAM	:	4892	CFS

Fission and activation total release was calculated from sample analysis results and release point flow rates.

Statistical error	60%
Counting equipment calibration	10%
Vent flow rates	10%
Non-steady release rates	20%
TOTAL ERROR	100%

I-131 releases were calculated from each weekly sample.

Statistical error	60%
Counting equipment calibration	10%
Vent flow rates	10%
Vent sample flow rates	10%
Non-steady release rates	10%
Losses from charcoal cartridges	10%
TOTAL ERROR	110%

Particulates with half lives greater than 8 days releases were calculated from sample analysis results and release point flow rates.

Statistical error	60%
Counting equipment calibration	10%
Vent flow rates	10%
Vent sample flow rates	10%
Non-steady release rates	10%
TOTAL ERROR	100%

Total tritium releases were calculated from sample analysis results and release point flow rates.

Water vapor in sample stream determination	20%
Vent flow rates	10%
Counting calibration and statistics	10%
Non-steady release rates	50%
TOTAL ERROR	90%

Gross Alpha radioactivity was calculated from sample analysis results and release point flow rates.

Statistical error	60%
Counting equipment calibration	10%
Vent flow rates	10%
Vent sample flow rates	10%
Non-steady release rates	10%
TOTAL ERROR	100%

2.3 Gaseous Effluent Release Data

Regulatory Guide 1.21 Tables 1A, 1B, and 1C are found in this report as Tables 2-1A, 2-1B, 2-1C, 2-2A, ,2-2B, 2-2C, 2-3A, 2-3B, 2-3C. Data is presented on a quarterly basis as required by Regulatory Guide 1.21 for all quarters.

To complete table 2-1A, 2-1B, and 2-1C, total release for each of the four categories (fission and activation gases, iodines, particulates, and tritium) was divided by the number of seconds in the quarter to obtain a release rate in uCi/second for each category for each quarter. However, the percent of the ODCM limits are not applicable because we have no curie limits for gaseous releases. Applicable limits are expressed in terms of dose. Noble gases are limited as specified in ODCM 3.1.2. The other three categories (tritium, radioiodines, and particulates) are limited as a group as specified in ODCM 3.1.2.

Dose rates due to noble gas releases, and due to radioiodine, tritium, and particulates were calculated as part of the pre-release and post-release permits on individual permits. No limits were exceeded for this reporting period.

Gross alpha radioactivity is reported in Table 2-1A, 2-1B, and 2-1C, as curies released in each quarter.

Limits for cumulative beta and gamma air doses due to noble gases are specified in ODCM 3.1.3. Cumulative air doses are presented in Table 2-4A and 2-4B, along with percent of ODCM limits.

Limits for cumulative doses to a Member of the Public due to radioiodine, tritium and particulates, are specified in ODCM 3.1.4. Cumulative doses to a Member of the Public doses are presented in Table 2-5A, and 2-5B, along with percent of ODCM limits.

2.4 Radiological Impact Due to Gaseous Releases

Dose rates due to noble gas release were calculated for the site in accordance with ODCM 3.1.2. Dose rates due to radioiodine, tritium, and particulates in gaseous releases were calculated in accordance with ODCM 3.1.2.

These dose rates were calculated as part of the pre-release and post release on individual release permits. No limits were exceeded for this reporting period.

Cumulative air doses due to noble gas releases were calculated for each unit in accordance with ODCM 3.1.3. These results are presented in Tables 2-4A and 2-4B.

Cumulative doses to a Member of the Public due to radioiodine, tritium and particulates in gaseous releases were calculated for each unit in accordance with ODCM 3.1.4. These results are presented in Tables 2-5A and 2-5B.

Dose rates and doses were calculated using the methodology presented in the ODCM.

2.5 Gaseous Effluents - Batch Releases

There are no gaseous batch releases from Plant Hatch.

2.6 Gaseous Effluents - Abnormal Releases

There were no unplanned or uncontrolled gaseous releases during this reporting period.

TABLE 2-1A
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents - Summation of All Releases
Unit: 1
Starting : 1-Jan-2001 Ending : 30-Jun-2001

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
A. FISSION & ACTIVATION PRODUCTS				
1. TOTAL RELEASE	CURIES	1.10E+01	1.58E+01	1.00E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	1.42E+00	2.01E+00	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
B. RADIOIODINES				
1. TOTAL IODINE-131	CURIES	2.22E-04	2.04E-04	1.10E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	2.85E-05	2.59E-05	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
C. PARTICULATES				
1. PARTICULATES(HALF-LIVES>8 DAYS)	CURIES	6.92E-05	8.09E-05	1.00E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	8.90E-06	1.03E-05	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
4. GROSS ALPHA RADIOACTIVITY	CURIES	0.00E+00	0.00E+00	
D. TRITIUM				
1. TOTAL RELEASE	CURIES	3.61E+00	3.92E+00	9.00E+01
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	4.65E-01	4.99E-01	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	

* Applicable limits are expressed in terms of dose. See Tables 2-4A, 2-4B, 2-5A, and 2-5B of this report.

TABLE 2-1A
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents - Summation of All Releases
Unit: 1
Starting : 1-Jul-2001 Ending : 31-Dec-2001

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
A. FISSION & ACTIVATION PRODUCTS				
1. TOTAL RELEASE	CURIES	2.74E+01	2.66E+01	1.00E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	3.44E+00	3.35E+00	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
B. RADIOIODINES				
1. TOTAL IODINE-131	CURIES	1.82E-04	2.44E-04	1.10E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	2.29E-05	3.07E-05	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
C. PARTICULATES				
1. PARTICULATES(HALF-LIVES>8 DAYS)	CURIES	5.77E-05	5.47E-05	1.00E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	7.26E-06	6.89E-06	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
4. GROSS ALPHA RADIOACTIVITY	CURIES	0.00E+00	0.00E+00	
D. TRITIUM				
1. TOTAL RELEASE	CURIES	3.96E+00	2.83E+00	9.00E+01
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	4.98E-01	3.56E-01	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	

* Applicable limits are expressed in terms of dose. See Tables 2-4A, 2-4B, 2-5A, and 2-5B of this report.

TABLE 2-1B
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents - Summation of All Releases
Unit: 2
Starting : 1-Jan-2001 Ending : 30-Jun-2001

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
A. FISSION & ACTIVATION PRODUCTS				
1. TOTAL RELEASE	CURIES	1.10E+01	1.58E+01	1.00E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	1.41E+00	2.01E+00	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
B. RADIOIODINES				
1. TOTAL IODINE-131	CURIES	2.04E-04	1.88E-04	1.10E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	2.62E-05	2.39E-05	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
C. PARTICULATES				
1. PARTICULATES(HALF-LIVES>8 DAYS)	CURIES	5.70E-05	6.46E-05	1.00E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	7.33E-06	8.22E-06	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
4. GROSS ALPHA RADIOACTIVITY	CURIES	0.00E+00	0.00E+00	
D. TRITIUM				
1. TOTAL RELEASE	CURIES	4.20E+00	4.18E+00	9.00E+01
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	5.40E-01	5.31E-01	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	

* Applicable limits are expressed in terms of dose. See Tables 2-4A, 2-4B, 2-5A, and 2-5B of this report.

TABLE 2-1B
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents - Summation of All Releases
Unit: 2
Starting : 1-Jul-2001 Ending : 31-Dec-2001

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
A. FISSION & ACTIVATION PRODUCTS				
1. TOTAL RELEASE	CURIES	1.98E+01	1.87E+01	1.00E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	2.49E+00	2.35E+00	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
B. RADIOIODINES				
1. TOTAL IODINE-131	CURIES	2.17E-04	2.03E-04	1.10E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	2.73E-05	2.56E-05	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
C. PARTICULATES				
1. PARTICULATES(HALF-LIVES>8 DAYS)	CURIES	4.76E-05	4.42E-05	1.00E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	5.99E-06	5.56E-06	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
4. GROSS ALPHA RADIOACTIVITY	CURIES	0.00E+00	0.00E+00	
D. TRITIUM				
1. TOTAL RELEASE	CURIES	4.28E+00	3.43E+00	9.00E+01
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	5.38E-01	4.31E-01	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	

* Applicable limits are expressed in terms of dose. See Tables 2-4A, 2-4B, 2-5A, and 2-5B of this report.

TABLE 2-1C
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents - Summation of All Releases
Unit: Site
Starting : 1-Jan-2001 Ending : 30-Jun-2001

TYPE OF EFFLUENT	UNITS	QUARTER 1	QUARTER 2	EST. TOT ERROR %
A. FISSION & ACTIVATION PRODUCTS				
1. TOTAL RELEASE	CURIES	2.20E+01	3.16E+01	1.00E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	2.83E+00	4.01E+00	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
B. RADIOIODINES				
1. TOTAL IODINE-131	CURIES	4.26E-04	3.92E-04	1.10E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	5.47E-05	4.98E-05	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
C. PARTICULATES				
1. PARTICULATES(HALF-LIVES>8 DAYS)	CURIES	1.26E-04	1.46E-04	1.00E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	1.62E-05	1.85E-05	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
4. GROSS ALPHA RADIOACTIVITY	CURIES	0.00E+00	0.00E+00	
D. TRITIUM				
1. TOTAL RELEASE	CURIES	7.82E+00	8.10E+00	9.00E+01
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	1.01E+00	1.03E+00	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	

* Applicable limits are expressed in terms of dose. See Tables 2-4A, 2-4B, 2-5A, and 2-5B of this report.

TABLE 2-1C
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents - Summation of All Releases
Unit: Site
Starting : 1-Jul-2001 Ending : 31-Dec-2001

TYPE OF EFFLUENT	UNITS	QUARTER 3	QUARTER 4	EST. TOT ERROR %
A. FISSION & ACTIVATION PRODUCTS				
1. TOTAL RELEASE	CURIES	4.71E+01	4.53E+01	1.00E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	5.93E+00	5.70E+00	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
B. RADIOIODINES				
1. TOTAL IODINE-131	CURIES	4.00E-04	4.48E-04	1.10E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	5.03E-05	5.63E-05	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
C. PARTICULATES				
1. PARTICULATES(HALF-LIVES>8 DAYS)	CURIES	1.05E-04	9.89E-05	1.00E+02
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	1.33E-05	1.24E-05	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	
4. GROSS ALPHA RADIOACTIVITY	CURIES	0.00E+00	0.00E+00	
D. TRITIUM				
1. TOTAL RELEASE	CURIES	8.23E+00	6.26E+00	9.00E+01
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/Sec	1.04E+00	7.87E-01	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	

* Applicable limits are expressed in terms of dose. See Tables 2-4A, 2-4B, 2-5A, and 2-5B of this report.

TABLE 2-2A*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents-Elevated Level Releases
Unit: 1
Starting : 1-Jan-2001 Ending : 30-Jun-2001

		CONTINUOUS MODE		BATCH MODE**	
NUCLIDES RELEASED	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
XE-137	CURIES	6.36E+00	7.62E+00	0.00E+00	0.00E+00
XE-135M	CURIES	3.13E+00	3.34E+00	0.00E+00	0.00E+00
AR-41	CURIES	0.00E+00	5.46E-01	0.00E+00	0.00E+00
KR-85M	CURIES	7.69E-01	2.42E+00	0.00E+00	0.00E+00
XE-135	CURIES	4.75E-01	6.17E-01	0.00E+00	0.00E+00
XE-133	CURIES	2.72E-01	1.24E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.10E+01	1.58E+01	0.00E+00	0.00E+00
IODINES					
I-133	CURIES	4.17E-04	4.80E-04	0.00E+00	0.00E+00
I-131	CURIES	1.70E-04	1.61E-04	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.87E-04	6.41E-04	0.00E+00	0.00E+00
PARTICULATES					
I-131	CURIES	3.42E-07	6.09E-08	0.00E+00	0.00E+00
BA-140	CURIES	2.65E-05	3.01E-05	0.00E+00	0.00E+00
SR-89	CURIES	2.41E-05	2.68E-05	0.00E+00	0.00E+00
MN-54	CURIES	8.59E-08	4.47E-08	0.00E+00	0.00E+00
CO-60	CURIES	9.36E-08	4.86E-08	0.00E+00	0.00E+00
SR-90	CURIES	1.89E-07	2.95E-07	0.00E+00	0.00E+00
CS-137	CURIES	4.48E-07	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.18E-05	5.73E-05	0.00E+00	0.00E+00
H-3	CURIES	1.11E+00	1.19E+00	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 2-6 for typical minimum detectable concentrations.

** There are no batch mode radioactive gaseous release pathways at Plant Hatch.

TABLE 2-2A*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents-Elevated Level Releases
Unit: 1
Starting : 1-Jul-2001 Ending : 31-Dec-2001

		CONTINUOUS MODE		BATCH MODE**	
NUCLIDES RELEASED	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
XE-137	CURIES	1.19E+01	9.95E-01	0.00E+00	0.00E+00
XE-138	CURIES	4.30E+00	7.56E+00	0.00E+00	0.00E+00
XE-135M	CURIES	2.17E+00	3.72E+00	0.00E+00	0.00E+00
AR-41	CURIES	1.69E-01	1.21E+00	0.00E+00	0.00E+00
KR-85M	CURIES	1.75E+00	9.62E-01	0.00E+00	0.00E+00
XE-135	CURIES	1.14E-01	7.93E+00	0.00E+00	0.00E+00
XE-133	CURIES	7.02E+00	4.23E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	2.74E+01	2.66E+01	0.00E+00	0.00E+00
IODINES					
I-133	CURIES	4.41E-04	6.05E-04	0.00E+00	0.00E+00
I-131	CURIES	1.33E-04	1.94E-04	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.74E-04	7.99E-04	0.00E+00	0.00E+00
PARTICULATES					
I-131	CURIES	2.15E-07	1.92E-07	0.00E+00	0.00E+00
BA-140	CURIES	2.62E-05	2.51E-05	0.00E+00	0.00E+00
SR-89	CURIES	2.34E-05	2.31E-05	0.00E+00	0.00E+00
MN-54	CURIES	0.00E+00	9.72E-08	0.00E+00	0.00E+00
SR-90	CURIES	5.00E-08	3.24E-07	0.00E+00	0.00E+00
CS-137	CURIES	2.12E-07	1.15E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.00E-05	4.90E-05	0.00E+00	0.00E+00
H-3	CURIES	1.42E+00	1.06E+00	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 2-6 for typical minimum detectable concentrations.

** There are no batch mode radioactive gaseous release pathways at Plant Hatch.

TABLE 2-2B*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents-Elevated Level Releases
Unit: 2
Starting : 1-Jan-2001 Ending : 30-Jun-2001

		CONTINUOUS MODE		BATCH MODE**	
NUCLIDES RELEASED	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
XE-137	CURIES	6.36E+00	7.62E+00	0.00E+00	0.00E+00
XE-135M	CURIES	3.13E+00	3.34E+00	0.00E+00	0.00E+00
AR-41	CURIES	0.00E+00	5.46E-01	0.00E+00	0.00E+00
KR-85M	CURIES	7.69E-01	2.42E+00	0.00E+00	0.00E+00
XE-135	CURIES	4.75E-01	6.17E-01	0.00E+00	0.00E+00
XE-133	CURIES	2.72E-01	1.24E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.10E+01	1.58E+01	0.00E+00	0.00E+00
IODINES					
I-133	CURIES	4.17E-04	4.80E-04	0.00E+00	0.00E+00
I-131	CURIES	1.70E-04	1.61E-04	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.87E-04	6.41E-04	0.00E+00	0.00E+00
PARTICULATES					
I-131	CURIES	3.42E-07	6.09E-08	0.00E+00	0.00E+00
BA-140	CURIES	2.65E-05	3.01E-05	0.00E+00	0.00E+00
SR-89	CURIES	2.41E-05	2.68E-05	0.00E+00	0.00E+00
MN-54	CURIES	8.59E-08	4.47E-08	0.00E+00	0.00E+00
CO-60	CURIES	9.36E-08	4.86E-08	0.00E+00	0.00E+00
SR-90	CURIES	1.89E-07	2.95E-07	0.00E+00	0.00E+00
CS-137	CURIES	4.48E-07	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.18E-05	5.73E-05	0.00E+00	0.00E+00
H-3	CURIES	1.11E+00	1.19E+00	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 2-6 for typical minimum detectable concentrations.

** There are no batch mode radioactive gaseous release pathways at Plant Hatch.

TABLE 2-2B*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents-Elevated Level Releases
Unit: 2
Starting : 1-Jul-2001 Ending : 31-Dec-2001

		CONTINUOUS MODE		BATCH MODE**	
NUCLIDES RELEASED	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
XE-137	CURIES	7.49E+00	0.00E+00	0.00E+00	0.00E+00
XE-138	CURIES	4.30E+00	3.90E+00	0.00E+00	0.00E+00
XE-135M	CURIES	1.32E+00	2.78E+00	0.00E+00	0.00E+00
AR-41	CURIES	1.69E-01	0.00E+00	0.00E+00	0.00E+00
KR-85M	CURIES	1.54E+00	7.27E-01	0.00E+00	0.00E+00
XE-135	CURIES	1.14E-01	7.93E+00	0.00E+00	0.00E+00
XE-133	CURIES	4.82E+00	3.36E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.98E+01	1.87E+01	0.00E+00	0.00E+00
IODINES					
I-133	CURIES	4.03E-04	4.72E-04	0.00E+00	0.00E+00
I-131	CURIES	1.22E-04	1.58E-04	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.24E-04	6.30E-04	0.00E+00	0.00E+00
PARTICULATES					
I-131	CURIES	2.15E-07	5.30E-08	0.00E+00	0.00E+00
BA-140	CURIES	2.16E-05	1.80E-05	0.00E+00	0.00E+00
SR-89	CURIES	1.97E-05	1.53E-05	0.00E+00	0.00E+00
SR-90	CURIES	5.00E-08	2.37E-07	0.00E+00	0.00E+00
CS-137	CURIES	1.71E-07	1.15E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	4.18E-05	3.38E-05	0.00E+00	0.00E+00
H-3	CURIES	1.23E+00	7.08E-01	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 2-6 for typical minimum detectable concentrations.

** There are no batch mode radioactive gaseous release pathways at Plant Hatch.

TABLE 2-2C*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents-Elevated Level Releases
Unit: Site
Starting : 1-Jan-2001 Ending : 30-Jun-2001

		CONTINUOUS MODE		BATCH MODE**	
NUCLIDES RELEASED	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
XE-137	CURIES	1.27E+01	1.52E+01	0.00E+00	0.00E+00
XE-135M	CURIES	6.26E+00	6.67E+00	0.00E+00	0.00E+00
AR-41	CURIES	0.00E+00	1.09E+00	0.00E+00	0.00E+00
KR-85M	CURIES	1.54E+00	4.84E+00	0.00E+00	0.00E+00
XE-135	CURIES	9.51E-01	1.23E+00	0.00E+00	0.00E+00
XE-133	CURIES	5.43E-01	2.48E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	2.20E+01	3.16E+01	0.00E+00	0.00E+00
IODINES					
I-133	CURIES	8.34E-04	9.60E-04	0.00E+00	0.00E+00
I-131	CURIES	3.40E-04	3.23E-04	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.17E-03	1.28E-03	0.00E+00	0.00E+00
PARTICULATES					
I-131	CURIES	6.84E-07	1.22E-07	0.00E+00	0.00E+00
BA-140	CURIES	5.30E-05	6.02E-05	0.00E+00	0.00E+00
SR-89	CURIES	4.82E-05	5.35E-05	0.00E+00	0.00E+00
MN-54	CURIES	1.72E-07	8.93E-08	0.00E+00	0.00E+00
CO-60	CURIES	1.87E-07	9.73E-08	0.00E+00	0.00E+00
SR-90	CURIES	3.78E-07	5.90E-07	0.00E+00	0.00E+00
CS-137	CURIES	8.96E-07	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.04E-04	1.15E-04	0.00E+00	0.00E+00
H-3	CURIES	2.21E+00	2.37E+00	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 2-6 for typical minimum detectable concentrations.

** There are no batch mode radioactive gaseous release pathways at Plant Hatch.

TABLE 2-2C*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents-Elevated Level Releases
Unit: Site
Starting : 1-Jul-2001 Ending : 31-Dec-2001

		CONTINUOUS MODE		BATCH MODE**	
NUCLIDES RELEASED	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
XE-137	CURIES	1.93E+01	9.95E-01	0.00E+00	0.00E+00
XE-138	CURIES	8.61E+00	1.15E+01	0.00E+00	0.00E+00
XE-135M	CURIES	3.49E+00	6.49E+00	0.00E+00	0.00E+00
AR-41	CURIES	3.38E-01	1.21E+00	0.00E+00	0.00E+00
KR-85M	CURIES	3.29E+00	1.69E+00	0.00E+00	0.00E+00
XE-135	CURIES	2.29E-01	1.59E+01	0.00E+00	0.00E+00
XE-133	CURIES	1.18E+01	7.59E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	4.71E+01	4.53E+01	0.00E+00	0.00E+00
IODINES					
I-133	CURIES	8.44E-04	1.08E-03	0.00E+00	0.00E+00
I-131	CURIES	2.54E-04	3.52E-04	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.10E-03	1.43E-03	0.00E+00	0.00E+00
PARTICULATES					
I-131	CURIES	4.30E-07	2.45E-07	0.00E+00	0.00E+00
BA-140	CURIES	4.78E-05	4.32E-05	0.00E+00	0.00E+00
SR-89	CURIES	4.31E-05	3.85E-05	0.00E+00	0.00E+00
MN-54	CURIES	0.00E+00	9.72E-08	0.00E+00	0.00E+00
SR-90	CURIES	9.99E-08	5.61E-07	0.00E+00	0.00E+00
CS-137	CURIES	3.83E-07	2.31E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	9.18E-05	8.28E-05	0.00E+00	0.00E+00
H-3	CURIES	2.66E+00	1.77E+00	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 2-6 for typical minimum detectable concentrations.

** There are no batch mode radioactive gaseous release pathways at Plant Hatch.

TABLE 2-3A*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents-Ground Level Releases
Unit: 1
Starting : 1-Jan-2001 Ending : 30-Jun-2001

		CONTINUOUS MODE		BATCH MODE**	
NUCLIDES RELEASED	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
XE-135	CURIES	2.16E-02	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	2.16E-02	0.00E+00	0.00E+00	0.00E+00
IODINES					
I-131	CURIES	5.14E-05	4.24E-05	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.14E-05	4.24E-05	0.00E+00	0.00E+00
PARTICULATES					
CR-51	CURIES	6.43E-06	5.87E-06	0.00E+00	0.00E+00
SR-89	CURIES	9.02E-06	3.56E-06	0.00E+00	0.00E+00
MN-54	CURIES	1.96E-06	1.79E-06	0.00E+00	0.00E+00
CO-60	CURIES	0.00E+00	1.23E-05	0.00E+00	0.00E+00
SR-90	CURIES	0.00E+00	9.87E-08	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.74E-05	2.36E-05	0.00E+00	0.00E+00
H-3	CURIES	2.51E+00	2.73E+00	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 2-6 for typical minimum detectable concentrations.

** There are no batch mode radioactive gaseous release pathways at Plant Hatch.

TABLE 2-3A*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents-Ground Level Releases
Unit: 1
Starting : 1-Jul-2001 Ending : 31-Dec-2001

		CONTINUOUS MODE		BATCH MODE**	
NUCLIDES RELEASED	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
IODINES					
I-133	CURIES	2.54E-05	7.16E-05	0.00E+00	0.00E+00
I-131	CURIES	4.92E-05	4.75E-05	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	7.46E-05	1.19E-04	0.00E+00	0.00E+00
PARTICULATES					
I-131	CURIES	0.00E+00	2.46E-06	0.00E+00	0.00E+00
SR-89	CURIES	7.64E-06	3.28E-06	0.00E+00	0.00E+00
SR-90	CURIES	1.30E-08	3.03E-09	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	7.65E-06	5.74E-06	0.00E+00	0.00E+00
H-3	CURIES	2.53E+00	1.77E+00	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 2-6 for typical minimum detectable concentrations.

** There are no batch mode radioactive gaseous release pathways at Plant Hatch.

TABLE 2-3B*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents-Ground Level Releases
Unit: 2
Starting : 1-Jan-2001 Ending : 30-Jun-2001

		CONTINUOUS MODE		BATCH MODE**	
NUCLIDES RELEASED	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
IODINES					
I-133	CURIES	3.46E-05	4.02E-05	0.00E+00	0.00E+00
I-131	CURIES	3.35E-05	2.65E-05	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	6.82E-05	6.66E-05	0.00E+00	0.00E+00
PARTICULATES					
SR-89	CURIES	5.24E-06	7.26E-06	0.00E+00	0.00E+00
SR-90	CURIES	0.00E+00	2.76E-08	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.24E-06	7.29E-06	0.00E+00	0.00E+00
H-3	CURIES	3.09E+00	2.99E+00	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 2-6 for typical minimum detectable concentrations.

** There are no batch mode radioactive gaseous release pathways at Plant Hatch.

TABLE 2-3B*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents-Ground Level Releases
Unit: 2
Starting : 1-Jul-2001 Ending : 31-Dec-2001

		CONTINUOUS MODE		BATCH MODE**	
NUCLIDES RELEASED	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
IODINES					
I-133	CURIES	5.43E-05	7.70E-05	0.00E+00	0.00E+00
I-131	CURIES	9.55E-05	4.27E-05	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.50E-04	1.20E-04	0.00E+00	0.00E+00
PARTICULATES					
I-131	CURIES	0.00E+00	2.54E-06	0.00E+00	0.00E+00
SR-89	CURIES	5.82E-06	7.85E-06	0.00E+00	0.00E+00
SR-90	CURIES	2.50E-08	3.17E-09	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.85E-06	1.04E-05	0.00E+00	0.00E+00
H-3	CURIES	3.04E+00	2.72E+00	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 2-6 for typical minimum detectable concentrations.

** There are no batch mode radioactive gaseous release pathways at Plant Hatch.

TABLE 2-3C*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents-Ground Level Releases
Unit: Site
Starting : 1-Jan-2001 Ending : 30-Jun-2001

		CONTINUOUS MODE		BATCH MODE**	
NUCLIDES RELEASED	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
XE-135	CURIES	2.16E-02	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	2.16E-02	0.00E+00	0.00E+00	0.00E+00
IODINES					
I-133	CURIES	3.46E-05	4.02E-05	0.00E+00	0.00E+00
I-131	CURIES	8.49E-05	6.88E-05	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.20E-04	1.09E-04	0.00E+00	0.00E+00
PARTICULATES					
CR-51	CURIES	6.43E-06	5.87E-06	0.00E+00	0.00E+00
SR-89	CURIES	1.43E-05	1.08E-05	0.00E+00	0.00E+00
MN-54	CURIES	1.96E-06	1.79E-06	0.00E+00	0.00E+00
CO-60	CURIES	0.00E+00	1.23E-05	0.00E+00	0.00E+00
SR-90	CURIES	0.00E+00	1.26E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	2.26E-05	3.09E-05	0.00E+00	0.00E+00
H-3	CURIES	5.60E+00	5.73E+00	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 2-6 for typical minimum detectable concentrations.

** There are no batch mode radioactive gaseous release pathways at Plant Hatch.

TABLE 2-3C*
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
Gaseous Effluents-Ground Level Releases
Unit: Site
Starting : 1-Jul-2001 Ending : 31-Dec-2001

		CONTINUOUS MODE		BATCH MODE**	
NUCLIDES RELEASED	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
IODINES					
I-133	CURIES	7.97E-05	1.49E-04	0.00E+00	0.00E+00
I-131	CURIES	1.45E-04	9.02E-05	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	2.24E-04	2.39E-04	0.00E+00	0.00E+00
PARTICULATES					
I-131	CURIES	0.00E+00	5.00E-06	0.00E+00	0.00E+00
SR-89	CURIES	1.35E-05	1.11E-05	0.00E+00	0.00E+00
SR-90	CURIES	3.80E-08	6.21E-09	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.35E-05	1.61E-05	0.00E+00	0.00E+00
H-3	CURIES	5.58E+00	4.49E+00	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 2-6 for typical minimum detectable concentrations.

** There are no batch mode radioactive gaseous release pathways at Plant Hatch.

TABLE 2-4A
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
AIR DOSES DUE TO GASEOUS RELEASES
Unit: 1
Starting: 01-Jan-2001 Ending: 30-Jun-2001

Cumulative Doses per Quarter

Type of Radiation	ODCM Limit	Units	Quarter 1	% of ODCM Limit	Quarter 2	% of ODCM Limit
Gamma	5.0	mrad	6.16E-05	1.23E-03	7.54E-05	1.51E-03
Beta	10.0	mrad	1.26E-04	1.26E-03	1.41E-04	1.41E-03

Cumulative Doses per Year

Type of Radiation	ODCM Limit	Units	Year to Ending Date	% of ODCM Limit
Gamma	10.0	mrad	1.37E-04	1.37E-03
Beta	20.0	mrad	2.67E-04	1.34E-03

TABLE 2-4A
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
AIR DOSES DUE TO GASEOUS RELEASES
Unit: 1
Starting: 01-Jul-2001 Ending: 31-Dec-2001

Cumulative Doses per Quarter

Type of Radiation	ODCM Limit	Units	Quarter 3	% of ODCM Limit	Quarter 4	% of ODCM Limit
Gamma	5.0	mrad	1.57E-04	3.13E-03	2.58E-04	5.16E-03
Beta	10.0	mrad	2.39E-04	2.39E-03	1.05E-04	1.05E-03

Cumulative Doses per Year

Type of Radiation	ODCM Limit	Units	Year to Ending Date	% of ODCM Limit
Gamma	10.0	mrad	5.52E-04	5.52E-03
Beta	20.0	mrad	6.12E-04	3.06E-03

TABLE 2-4B
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
AIR DOSES DUE TO GASEOUS RELEASES
Unit: 2
Starting: 01-Jan-2001 Ending: 30-Jun-2001

Cumulative Doses per Quarter

Type of Radiation	ODCM Limit	Units	Quarter 1	% of ODCM Limit	Quarter 2	% of ODCM Limit
Gamma	5.0	mrad	5.06E-05	1.01E-03	7.54E-05	1.51E-03
Beta	10.0	mrad	1.12E-04	1.12E-03	1.41E-04	1.41E-03

Cumulative Doses per Year

Type of Radiation	ODCM Limit	Units	Year to Ending Date	% of ODCM Limit
Gamma	10.0	mrad	1.26E-04	1.26E-03
Beta	20.0	mrad	2.53E-04	1.26E-03

TABLE 2-4B
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
AIR DOSES DUE TO GASEOUS RELEASES
Unit: 2
Starting: 01-Jul-2001 Ending: 31-Dec-2001

Cumulative Doses per Quarter

Type of Radiation	ODCM Limit	Units	Quarter 3	% of ODCM Limit	Quarter 4	% of ODCM Limit
Gamma	5.0	mrad	1.34E-04	2.68E-03	1.42E-04	2.83E-03
Beta	10.0	mrad	1.63E-04	1.63E-03	5.86E-05	5.86E-04

Cumulative Doses per Year

Type of Radiation	ODCM Limit	Units	Year to Ending Date	% of ODCM Limit
Gamma	10.0	mrad	4.02E-04	4.02E-03
Beta	20.0	mrad	4.75E-04	2.37E-03

TABLE 2-5A
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSES TO A MEMBER OF THE PUBLIC DUE TO RADIOIODINES, TRITIUM,
AND PARTICULATES IN GASEOUS RELEASES
Unit: 1
Starting: 01-Jan-2001 Ending: 30-Jun-2001

Cumulative Doses per Quarter

Organ	ODCM Limit	Unit	Quarter 1	% of ODCM Limit	Quarter 2	% of ODCM Limit
Bone	7.5	mrem	1.45E-04	1.93E-03	2.39E-04	3.18E-03
Liver	7.5	mrem	1.32E-03	1.75E-02	1.51E-03	2.01E-02
TBody	7.5	mrem	1.32E-03	1.76E-02	1.53E-03	2.04E-02
Thyroid	7.5	mrem	2.45E-03	3.27E-02	2.49E-03	3.32E-02
Kidney	7.5	mrem	1.32E-03	1.76E-02	1.51E-03	2.01E-02
Lung	7.5	mrem	1.31E-03	1.75E-02	1.51E-03	2.02E-02
GILLI	7.5	mrem	1.32E-03	1.76E-02	1.51E-03	2.02E-02

Cumulative Doses per Year

Organ	ODCM Limit	Units	Year to Ending Date	% of ODCM Limit
Bone	15.0	mrem	3.84E-04	2.56E-03
Liver	15.0	mrem	2.82E-03	1.88E-02
TBody	15.0	mrem	2.85E-03	1.90E-02
Thyroid	15.0	mrem	4.94E-03	3.29E-02
Kidney	15.0	mrem	2.82E-03	1.88E-02
Lung	15.0	mrem	2.83E-03	1.88E-02
GILLI	15.0	mrem	2.83E-03	1.89E-02

TABLE 2-5A
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSES TO A MEMBER OF THE PUBLIC DUE TO RADIOIODINES, TRITIUM, AND PARTICULATES IN GASEOUS RELEASES
Unit: 1
Starting: 01-Jul-2001 Ending: 31-Dec-2001

Cumulative Doses per Quarter

Organ	ODCM Limit	Unit	Quarter 3	% of ODCM Limit	Quarter 4	% of ODCM Limit
Bone	7.5	mrem	1.46E-04	1.95E-03	8.84E-05	1.18E-03
Liver	7.5	mrem	1.33E-03	1.77E-02	9.30E-04	1.24E-02
TBody	7.5	mrem	1.34E-03	1.79E-02	9.35E-04	1.25E-02
Thyroid	7.5	mrem	2.37E-03	3.16E-02	2.11E-03	2.81E-02
Kidney	7.5	mrem	1.33E-03	1.78E-02	9.32E-04	1.24E-02
Lung	7.5	mrem	1.33E-03	1.77E-02	9.27E-04	1.24E-02
GILLI	7.5	mrem	1.33E-03	1.78E-02	9.30E-04	1.24E-02

Cumulative Doses per Year

Organ	ODCM Limit	Units	Year to Ending Date	% of ODCM Limit
Bone	15.0	mrem	6.18E-04	4.12E-03
Liver	15.0	mrem	5.08E-03	3.39E-02
TBody	15.0	mrem	5.12E-03	3.42E-02
Thyroid	15.0	mrem	9.42E-03	6.28E-02
Kidney	15.0	mrem	5.09E-03	3.39E-02
Lung	15.0	mrem	5.08E-03	3.39E-02
GILLI	15.0	mrem	5.09E-03	3.40E-02

TABLE 2-5B
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSES TO A MEMBER OF THE PUBLIC DUE TO RADIOIODINES, TRITIUM, AND PARTICULATES IN GASEOUS RELEASES
Unit: 2

Starting: 01-Jan-2001 Ending: 30-Jun-2001

Cumulative Doses per Quarter

Organ	ODCM Limit	Unit	Quarter 1	% of ODCM Limit	Quarter 2	% of ODCM Limit
Bone	7.5	mrem	1.05E-04	1.40E-03	1.62E-04	2.15E-03
Liver	7.5	mrem	1.62E-03	2.16E-02	1.56E-03	2.09E-02
TBody	7.5	mrem	1.62E-03	2.16E-02	1.58E-03	2.10E-02
Thyroid	7.5	mrem	2.51E-03	3.34E-02	2.34E-03	3.12E-02
Kidney	7.5	mrem	1.62E-03	2.16E-02	1.57E-03	2.09E-02
Lung	7.5	mrem	1.62E-03	2.15E-02	1.56E-03	2.08E-02
GILLI	7.5	mrem	1.62E-03	2.16E-02	1.57E-03	2.09E-02

Cumulative Doses per Year

Organ	ODCM Limit	Units	Year to Ending Date	% of ODCM Limit
Bone	15.0	mrem	2.67E-04	1.78E-03
Liver	15.0	mrem	3.18E-03	2.12E-02
TBody	15.0	mrem	3.20E-03	2.13E-02
Thyroid	15.0	mrem	4.85E-03	3.23E-02
Kidney	15.0	mrem	3.18E-03	2.12E-02
Lung	15.0	mrem	3.18E-03	2.12E-02
GILLI	15.0	mrem	3.19E-03	2.12E-02

TABLE 2-5B
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSES TO A MEMBER OF THE PUBLIC DUE TO RADIOIODINES, TRITIUM,
AND PARTICULATES IN GASEOUS RELEASES
Unit: 2
Starting: 01-Jul-2001 Ending: 31-Dec-2001

Cumulative Doses per Quarter

Organ	ODCM Limit	Unit	Quarter 3	% of ODCM Limit	Quarter 4	% of ODCM Limit
Bone	7.5	mrem	1.27E-04	1.70E-03	1.25E-04	1.67E-03
Liver	7.5	mrem	1.59E-03	2.13E-02	1.42E-03	1.89E-02
TBody	7.5	mrem	1.60E-03	2.14E-02	1.42E-03	1.90E-02
Thyroid	7.5	mrem	3.32E-03	4.42E-02	2.45E-03	3.26E-02
Kidney	7.5	mrem	1.60E-03	2.13E-02	1.42E-03	1.89E-02
Lung	7.5	mrem	1.59E-03	2.12E-02	1.42E-03	1.89E-02
GILLI	7.5	mrem	1.59E-03	2.12E-02	1.42E-03	1.89E-02

Cumulative Doses per Year

Organ	ODCM Limit	Units	Year to Ending Date	% of ODCM Limit
Bone	15.0	mrem	5.19E-04	3.46E-03
Liver	15.0	mrem	6.19E-03	4.13E-02
TBody	15.0	mrem	6.22E-03	4.15E-02
Thyroid	15.0	mrem	1.06E-02	7.07E-02
Kidney	15.0	mrem	6.20E-03	4.13E-02
Lung	15.0	mrem	6.19E-03	4.12E-02
GILLI	15.0	mrem	6.20E-03	4.13E-02

TABLE 2-6
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
MINIMUM DETECTABLE CONCENTRATIONS - GASEOUS SAMPLE ANALYSES
STARTING: 1-Jan-2001 ENDING: 31-Dec-2001

The values in this table represent a priori Minimum Detectable Concentration (MDC) that are typically achieved in laboratory analyses of gaseous radwaste samples.

RADIONUCLIDE	***MDC***	***UNITS***
Kr-87	2.94E-08	uCi/cc
Kr-88	3.22E-08	uCi/cc
Xe-133	2.30E-08	uCi/cc
Xe-133m	7.30E-08	uCi/cc
Xe-135	8.73E-09	uCi/cc
Xe-138	1.99E-07	uCi/cc
I-131	1.34E-13*	uCi/cc
I-133	1.53E-13*	uCi/cc
Mn-54	1.62E-13*	uCi/cc
Fe-59	3.42E-13*	uCi/cc
Co-58	1.30E-13*	uCi/cc
Co-60	1.54E-13*	uCi/cc
Zn-65	2.54E-13*	uCi/cc
Mo-99	9.61E-13*	uCi/cc
Cs-134	1.42E-13*	uCi/cc
Cs-137	1.28E-13*	uCi/cc
Ce-141	1.26E-13*	uCi/cc
Ce-144	5.64E-13*	uCi/cc
Sr-89	1.10E-16	uCi/cc
Sr-90	6.70E-16	uCi/cc
H-3	4.00E-07	uCi/cc

** Based on an estimated sample quantity of 4.078E+07 cc's.*

Table 2-7A
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
GASEOUS EFFLUENTS - BATCH RELEASE SUMMARY
UNIT 1

STARTING: 1-Jan-2001 ***ENDING: 30-Jun-2001***

NUMBER OF BATCH RELEASES	:	0	
TOTAL TIME PERIOD FOR BATCH RELEASES	:	0	MINUTES
MAXIMUM TIME PERIOD FOR A BATCH RELEASE	:	0	MINUTES
AVERAGE TIME FOR BATCH RELEASES	:	0	MINUTES
MINIMUM TIME FOR A BATCH RELEASE	:	0	MINUTES

There were no batch gaseous releases for this reporting period.

Table 2-7A
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
GASEOUS EFFLUENTS - BATCH RELEASE SUMMARY
UNIT 1

STARTING: 1-Jul-2001 ***ENDING: 31-Dec-2001***

NUMBER OF BATCH RELEASES	:	0	
TOTAL TIME PERIOD FOR BATCH RELEASES	:	0	MINUTES
MAXIMUM TIME PERIOD FOR A BATCH RELEASE	:	0	MINUTES
AVERAGE TIME FOR BATCH RELEASES	:	0	MINUTES
MINIMUM TIME FOR A BATCH RELEASE	:	0	MINUTES

There were no batch gaseous releases for this reporting period.

Table 2-7B
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
GASEOUS EFFLUENTS - BATCH RELEASE SUMMARY
UNIT 2
STARTING: 1-Jan-2001 ***ENDING: 30-Jun-2001***

NUMBER OF BATCH RELEASES	:	0	
TOTAL TIME PERIOD FOR BATCH RELEASES	:	0	MINUTES
MAXIMUM TIME PERIOD FOR A BATCH RELEASE	:	0	MINUTES
AVERAGE TIME FOR BATCH RELEASES	:	0	MINUTES
MINIMUM TIME FOR A BATCH RELEASE	:	0	MINUTES

There were no batch gaseous releases for this reporting period.

Table 2-7B
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
GASEOUS EFFLUENTS - BATCH RELEASE SUMMARY
UNIT 2
STARTING: 1-Jul-2001 ***ENDING: 31-Dec-2001***

NUMBER OF BATCH RELEASES	:	0	
TOTAL TIME PERIOD FOR BATCH RELEASES	:	0	MINUTES
MAXIMUM TIME PERIOD FOR A BATCH RELEASE	:	0	MINUTES
AVERAGE TIME FOR BATCH RELEASES	:	0	MINUTES
MINIMUM TIME FOR A BATCH RELEASE	:	0	MINUTES

There were no batch gaseous releases for this reporting period.

Table 2-8A
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
GASEOUS EFFLUENTS - ABNORMAL RELEASE SUMMARY
UNIT 1

STARTING: 1-Jan-2001 ***ENDING: 30-Jun-2001***

NUMBER OF RELEASES	:	0	
TOTAL TIME FOR ALL RELEASES	:	0	MINUTES
MAXIMUM TIME FOR A RELEASE	:	0	MINUTES
AVERAGE TIME FOR A RELEASE	:	0	MINUTES
MINIMUM TIME FOR A RELEASE	:	0	MINUTES
TOTAL ACTIVITY FOR ALL RELEASES	:	0.00E+00	CURIES

There were no abnormal gaseous releases for this reporting period.

Table 2-8A
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
GASEOUS EFFLUENTS - ABNORMAL RELEASE SUMMARY
UNIT 1

STARTING: 1-Jul-2001 ***ENDING: 31-Dec-2001***

NUMBER OF RELEASES	:	0	
TOTAL TIME FOR ALL RELEASES	:	0	MINUTES
MAXIMUM TIME FOR A RELEASE	:	0	MINUTES
AVERAGE TIME FOR A RELEASE	:	0	MINUTES
MINIMUM TIME FOR A RELEASE	:	0	MINUTES
TOTAL ACTIVITY FOR ALL RELEASES	:	0.00E+00	CURIES

There were no abnormal gaseous releases for this reporting period.

Table 2-8B
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
GASEOUS EFFLUENTS - ABNORMAL RELEASE SUMMARY
UNIT 2

STARTING: 1-Jan-2001 ***ENDING: 30-Jun-2001***

NUMBER OF RELEASES	:	0	
TOTAL TIME FOR ALL RELEASES	:	0	MINUTES
MAXIMUM TIME FOR A RELEASE	:	0	MINUTES
AVERAGE TIME FOR A RELEASE	:	0	MINUTES
MINIMUM TIME FOR A RELEASE	:	0	MINUTES
TOTAL ACTIVITY FOR ALL RELEASES	:	0.00E+00	CURIES

There were no abnormal gaseous releases for this reporting period.

Table 2-8B
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
GASEOUS EFFLUENTS - ABNORMAL RELEASE SUMMARY
UNIT 2

STARTING: 1-Jul-2001 ***ENDING: 31-Dec-2001***

NUMBER OF RELEASES	:	0	
TOTAL TIME FOR ALL RELEASES	:	0	MINUTES
MAXIMUM TIME FOR A RELEASE	:	0	MINUTES
AVERAGE TIME FOR A RELEASE	:	0	MINUTES
MINIMUM TIME FOR A RELEASE	:	0	MINUTES
TOTAL ACTIVITY FOR ALL RELEASES	:	0.00E+00	CURIES

There were no abnormal gaseous releases for this reporting period.

3.0 Solid Waste

3.1 Regulatory Requirements

The Process Control Program (PCP) and the ODCM requirements presented in this section are for Unit 1 and Unit 2 and are stated in part.

3.1.1 Solid Radioactive Waste System

PCP Section A.3.1 Solid Radioactive Waste System control states:

The solid radwaste system shall be used in accordance with the PROCESS CONTROL PROGRAM to provide for the SOLIDIFICATION of wet solid wastes and for the SOLIDIFICATION and packaging of other radioactive wastes, as required, to ensure that they meet requirements of 10 CFR Parts 20 and 71, prior to shipment of radioactive wastes from the site.

3.1.2 Reporting Requirements

Technical Specification 5.6.3 requires in part:

The Radioactive Effluent Release Report covering the operation of the unit shall be submitted in accordance with 10 CFR 50.36a. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit. The material provided shall be consistent with the objectives outlined in the ODCM and the Process Control Program and in conformance with 10 CFR 50.36a and 10 CFR 50, Appendix I, Section IV.B.1.

PCP Section A.4.1 states in part:

The Radioactive Effluent Release Report, submitted in accordance with Technical Specification 5.6.3, shall include a summary of the quantities of solid radwaste released from the units as outlined 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, with data summarized on a 6 month basis following the format of Appendix B thereof.

For each type of solid radwaste shipped offsite during the report period, the report shall include the following information:

a. Container volume.

b. Total curie quantity (specify whether determined by measurement or estimate).

c. Principal radionuclides (specify whether determined by measurement or estimate).

d. Type of waste (such as spent resin, compacted dry waste, evaporator bottoms).

e. Type of container (such as LSA, type A, type B, large quantity).

f. Solidification agent (such as cement).

Major changes to the solid radioactive waste treatment system shall be reported to the Nuclear Regulatory Commission in the Radioactive Effluent Release Report for the period in which the evaluation was reviewed and accepted by the PRB.

3.2 Solid Waste Data

Regulatory Guide 1.21, Table 3 is found in this report as Table 3-1.

TABLE 3-1
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
UNIT 1 AND 2

STARTING: 1-Jan-2001 ***ENDING: 30-Jun-2001***

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not irradiated fuel)

1. Type of waste	UNIT	6 month period	Est. Total ERROR %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m^3	4.19E+01	
	Ci	1.02E+02	1.00 E 01
b. Dry compressible waste, contaminated equip. etc.	m^3	3.66E+01	
	Ci	1.08E+02	2.00 E 01
c. Irradiated components, control rods,	m^3	. E	
	Ci	. E	. E
d. Control Rod Drive Filters	m^3	. E	
	Ci	. E	. E
e. Other (describe) Equip. etc.	m^3	. E	
	Ci	. E	. E

2. Estimate of major nuclide composition (by type of waste)

ISOTOPE	PERCENT	CURIES
a.Fe-55	35.1	3.58E+01
Co-60	25.9	2.65E+01
Zn-65	14.6	1.49E+01
Mn-54	12.2	1.24E+01
Other	12.2	1.24E+01
b.Fe-55	64.1	6.91E+01
Co-60	12.4	1.34E+01
Mn-54	13.8	1.49E+01
Cr-51	4.63	4.99E+00
Other	5.09	5.49E+00
c.		
d.		
e.		

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
8	Tractor and Trailer	Barnwell/Envirocare

B. IRRADIATED FUEL SHIPMENTS (Disposition)

Number of Shipments	Mode of Transportation	Destination
0	N/A	N/A

TABLE 3-1
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
UNIT 1 AND 2

STARTING: 1-Jul-2001 ***ENDING: 31-Dec-2001***

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not irradiated fuel)

1. Type of waste	UNIT	6 month period	Est. Total ERROR %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m^3	1.18E+01	
	Ci	6.83E+01	1.00 E 01
b. Dry compressible waste, contaminated equip. etc.	m^3	8.20E+01	
	Ci	2.28E+01	2.00 E 01
c. Irradiated components, control rods,	m^3	. E	
	Ci	. E	. E
d. Control Rod Drive Filters	m^3	. E	
	Ci	. E	. E
e. Other (describe) Equip. etc.	m^3	. E	
	Ci	. E	. E

2. Estimate of major nuclide composition (by type of waste)

ISOTOPE	PERCENT	CURIES
a.Fe-55	27.6	1.88E+01
Co-60	21.8	1.49E+01
Zn-65	26.6	1.82E+01
Mn-54	11.5	7.87E+00
Other	12.5	8.55E+00
b.Fe-55	64.1	1.46E+01
Co-60	12.4	2.83E+00
Mn-54	13.8	3.15E+00
Cr-51	4.63	1.06E+00
Other	5.09	1.16E+00
c.		
d.		
e.		

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
3	Tractor and Trailer	Barnwell/Envirocare

B. IRRADIATED FUEL SHIPMENTS (Disposition)

Number of Shipments	Mode of Transportation	Destination
0	N/A	N/A

TABLE 3-1
E. I. HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
UNIT 1 AND 2

STARTING: 1-Jan-2001 **ENDING: 30-Jun-2001**

TYPE OF WASTE	CURIE QUANTITY/ DETERMINED	PRINCIPAL NUCLIDES/ DETERMINATION	BURIAL CONTAINER DESCRIPTION	NUMBER OF CONTAINERS SHIPPED	VOLUME OF EACH CONTAINER *CUBIC FEET* (FT 3)	TYPE SHIPMENT/ CONTAINER	SOLIDIFICATION AGENT
Dewatered Resins	102	Zn-65,Fe-55,Co-60 Mn-54	High Intergrity Container	6 *See Note	202.1/132.4	DOT 7a Type A Cask/14-210 /**STC Cask/	N/A
Dry Active Waste	108.0	Fe-55,Co-60,Mn-54 Cr-51	B-25 Boxes	13 * See Note	96/132.4	**STC (B-25)/DOT 7A TYPE A CASK	N/A

* Note: The actual size and number of the containers may vary due to the use of different burial containers by waste processors.
** STC-Strong Tight Container

TABLE 3-1
E.I.HATCH NUCLEAR PLANT
RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
UNIT 1 AND 2

STARTING: 1-JUL-2001 **ENDING:31-DEC-2001**

TYPE OF WASTE	CURIE QUANTITY/ DETERMINED	PRINCIPAL NUCLIDES/ DETERMINATION	BURIAL CONTAINER DESCRIPTION	NUMBER OF CONTAINERS SHIPPED	VOLUME OF EACH CONTAINER CUBIC FEET (FT 3)	TYPE SHIPMENT/ CONTAINER	SOLIDIFICATION AGENT
Dewatered Resins	68.3	Zn-65,Fe-55,Co-60 Mn-54	High Intergrity Container	3.47 *See Note	120.3	DOT 7a Type A Cask/14-210 /**STC Cask/	N/A
Dry Active Waste	7.44	Fe-55,C0-60,Mn-54 Cr-51	B-25 Boxes/High Integrity Container	26 * See Note	96/132.4	**STC (B-25)/DOT 7A TYPE A CASK	N/A
Dry Active Waste (Recirc Pump Impellers)	15.4	Fe-55,Co-60,Mn-54 Cr-51	*** In Place Stabilization At Barnwell (Concrete)	2	179	DOT 7A Type A CASK/14-210	Unknown

* Note: The actual size and number of the containers may vary due to the use of different burial containers by waste processors.All resin waste for the second half of 2001 was shipped to Studsvik for processing prior to burial.
** STC-Strong Tight Container
*** Note: In place stabilization performed by Chem-Nuclear Systems at the Barnwell Disposal Facility. Volume recorded is the actual displacement (burial) volume after stabilization.

4.0 Doses to Members of the Public Inside the Site Boundary

4.1 Regulatory Requirements

ODCM 7.2.2.3 states in part that the Radioactive Effluent Release Report shall also 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; this assessment must be performed in accordance with the ODCM.

4.2 Demonstration of Compliance

The locations of concern within the site boundary are the Roadside Park, the Camping Area, the Recreation Area, and the Visitors Center. Listed in Table 4-1 are: The distance and direction from a point midway between the center of Unit 1 and the Unit 2 reactors, the dispersion and deposition factors for any releases from the Main Stack (elevated) and from the reactor building (ground level); and the estimated maximum occupancy factor for an individual and the assumed age group of this individual.

The source term is not listed in Table 4-1 . The source term is listed in Tables 2-2A and 2-2B, for the elevated releases. Similarly the source term is listed in Tables 2-3A and 2-3B for the ground level releases.

The maximum doses in units of mrem accumulated by an individual MEMBER OF THE PUBLIC due to their activities inside the site boundary during the reporting period are presented in Table 4-1.

TABLE 4-1
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSE TO A MEMBER OF THE PUBLIC
DUE TO ACTIVITIES INSIDE THE SITE BOUNDARY
Unit: Site

Starting: 01-Jan-2001 Ending: 30-Jun-2001

Location Name	ROADSIDE PARK
Distance (kilometers)	1.18E+00
Sector	WNW
Occupancy Factor	2.28E-04 (2.00E+00 hr/yr)
Age Group	CHILD

Ground Level Releases:	
Noble Gas X/Q (sec/m3)	7.83E-06
Particulate X/Q (sec/m3)	7.00E-06
Particulate D/Q (m-2)	2.01E-08
Mixed Mode Releases:	
Noble Gas X/Q (sec/m3)	N/A
Particulate X/Q (sec/m3)	N/A
Particulate D/Q (m-2)	N/A
Elevated Releases:	
Noble Gas X/Q (sec/m3)	2.42E-08
Particulate X/Q (sec/m3)	2.37E-08
Particulate D/Q (m-2)	1.29E-09

	Units	Quarter 1	Quarter 2	Quarters 1 and 2	Year to Ending Date
Bone	mrem	2.67E-08	7.41E-08	1.01E-07	1.01E-07
Liver	mrem	3.59E-07	3.98E-07	7.56E-07	7.56E-07
TBody	mrem	3.58E-07	3.98E-07	7.56E-07	7.56E-07
Thyroid	mrem	4.39E-07	4.63E-07	9.02E-07	9.02E-07
Kidney	mrem	3.59E-07	3.98E-07	7.56E-07	7.56E-07
Lung	mrem	3.60E-07	4.03E-07	7.63E-07	7.63E-07
GI-LLI	mrem	3.58E-07	3.98E-07	7.56E-07	7.56E-07

TABLE 4-1
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSE TO A MEMBER OF THE PUBLIC
DUE TO ACTIVITIES INSIDE THE SITE BOUNDARY
Unit: Site

Starting: 01-Jan-2001 Ending: 30-Jun-2001

Location Name	CAMPING AREA
Distance (kilometers)	1.27E+00
Sector	WNW
Occupancy Factor	5.48E-03 (4.80E+01 hr/yr)
Age Group	CHILD

Ground Level Releases:	
Noble Gas X/Q (sec/m3)	7.03E-06
Particulate X/Q (sec/m3)	6.27E-06
Particulate D/Q (m-2)	1.80E-08
Mixed Mode Releases:	
Noble Gas X/Q (sec/m3)	N/A
Particulate X/Q (sec/m3)	N/A
Particulate D/Q (m-2)	N/A
Elevated Releases:	
Noble Gas X/Q (sec/m3)	2.38E-08
Particulate X/Q (sec/m3)	2.33E-08
Particulate D/Q (m-2)	1.21E-09

	Units	Quarter 1	Quarter 2	Quarters 1 and 2	Year to Ending Date
Bone	mrem	5.95E-07	1.62E-06	2.22E-06	2.22E-06
Liver	mrem	7.74E-06	8.59E-06	1.63E-05	1.63E-05
TBody	mrem	7.74E-06	8.59E-06	1.63E-05	1.63E-05
Thyroid	mrem	9.47E-06	9.99E-06	1.95E-05	1.95E-05
Kidney	mrem	7.74E-06	8.59E-06	1.63E-05	1.63E-05
Lung	mrem	7.78E-06	8.71E-06	1.65E-05	1.65E-05
GI-LLI	mrem	7.74E-06	8.59E-06	1.63E-05	1.63E-05

TABLE 4-1
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSE TO A MEMBER OF THE PUBLIC
DUE TO ACTIVITIES INSIDE THE SITE BOUNDARY
Unit: Site

Starting: 01-Jan-2001 Ending: 30-Jun-2001

Location Name	RECREATION AREA
Distance (kilometers)	1.03E+00
Sector	SSE
Occupancy Factor	2.37E-02 (2.08E+02 hr/yr)
Age Group	CHILD

Ground Level Releases:	
Noble Gas X/Q (sec/m3)	6.42E-06
Particulate X/Q (sec/m3)	5.73E-06
Particulate D/Q (m-2)	2.36E-08
Mixed Mode Releases:	
Noble Gas X/Q (sec/m3)	N/A
Particulate X/Q (sec/m3)	N/A
Particulate D/Q (m-2)	N/A
Elevated Releases:	
Noble Gas X/Q (sec/m3)	3.30E-08
Particulate X/Q (sec/m3)	3.21E-08
Particulate D/Q (m-2)	1.56E-09

	Units	Quarter 1	Quarter 2	Quarters 1 and 2	Year to Ending Date
Bone	mrem	2.43E-06	7.89E-06	1.03E-05	1.03E-05
Liver	mrem	3.07E-05	3.54E-05	6.61E-05	6.61E-05
TBody	mrem	3.07E-05	3.54E-05	6.61E-05	6.61E-05
Thyroid	mrem	3.76E-05	4.11E-05	7.87E-05	7.87E-05
Kidney	mrem	3.07E-05	3.55E-05	6.62E-05	6.62E-05
Lung	mrem	3.08E-05	3.59E-05	6.68E-05	6.68E-05
GI-LLI	mrem	3.07E-05	3.54E-05	6.61E-05	6.61E-05

TABLE 4-1
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSE TO A MEMBER OF THE PUBLIC
DUE TO ACTIVITIES INSIDE THE SITE BOUNDARY
Unit: Site

Starting: 01-Jan-2001 Ending: 30-Jun-2001

Location Name	VISITORS CENTER
Distance (kilometers)	6.94E-01
Sector	WSW
Occupancy Factor	4.57E-04 (4.00E+00 hr/yr)
Age Group	CHILD

Ground Level Releases:

Noble Gas X/Q (sec/m3)	1.87E-05
Particulate X/Q (sec/m3)	1.72E-05
Particulate D/Q (m-2)	5.47E-08

Mixed Mode Releases:

Noble Gas X/Q (sec/m3)	N/A
Particulate X/Q (sec/m3)	N/A
Particulate D/Q (m-2)	N/A

Elevated Releases:

Noble Gas X/Q (sec/m3)	5.00E-08
Particulate X/Q (sec/m3)	4.97E-08
Particulate D/Q (m-2)	2.26E-09

	Units	Quarter 1	Quarter 2	Quarters 1 and 2	Year to Ending Date
Bone	mrem	1.01E-07	3.40E-07	4.41E-07	4.41E-07
Liver	mrem	1.74E-06	1.93E-06	3.67E-06	3.67E-06
TBody	mrem	1.73E-06	1.93E-06	3.67E-06	3.67E-06
Thyroid	mrem	2.13E-06	2.25E-06	4.38E-06	4.38E-06
Kidney	mrem	1.74E-06	1.93E-06	3.67E-06	3.67E-06
Lung	mrem	1.74E-06	1.96E-06	3.70E-06	3.70E-06
GI-LLI	mrem	1.73E-06	1.93E-06	3.67E-06	3.67E-06

TABLE 4-1
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSE TO A MEMBER OF THE PUBLIC
DUE TO ACTIVITIES INSIDE THE SITE BOUNDARY
Unit: Site

Starting: 01-Jul-2001 Ending: 31-Dec-2001

Location Name	ROADSIDE PARK
Distance (kilometers)	1.18E+00
Sector	WNW
Occupancy Factor	2.28E-04 (2.00E+00 hr/yr)
Age Group	CHILD

Ground Level Releases:	
Noble Gas X/Q (sec/m3)	7.83E-06
Particulate X/Q (sec/m3)	7.00E-06
Particulate D/Q (m-2)	2.01E-08
Mixed Mode Releases:	
Noble Gas X/Q (sec/m3)	N/A
Particulate X/Q (sec/m3)	N/A
Particulate D/Q (m-2)	N/A
Elevated Releases:	
Noble Gas X/Q (sec/m3)	2.42E-08
Particulate X/Q (sec/m3)	2.37E-08
Particulate D/Q (m-2)	1.29E-09

	Units	Quarter 3	Quarter 4	Quarters 3 and 4	Year to Ending Date
Bone	mrem	7.43E-08	1.16E-07	1.90E-07	2.91E-07
Liver	mrem	3.87E-07	3.64E-07	7.51E-07	1.51E-06
TBody	mrem	3.86E-07	3.64E-07	7.50E-07	1.51E-06
Thyroid	mrem	5.23E-07	4.65E-07	9.89E-07	1.89E-06
Kidney	mrem	3.87E-07	3.64E-07	7.51E-07	1.51E-06
Lung	mrem	3.88E-07	3.65E-07	7.53E-07	1.52E-06
GI-LLI	mrem	3.86E-07	3.64E-07	7.50E-07	1.51E-06

TABLE 4-1
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSE TO A MEMBER OF THE PUBLIC
DUE TO ACTIVITIES INSIDE THE SITE BOUNDARY
Unit: Site

Starting: 01-Jul-2001 Ending: 31-Dec-2001

Location Name	CAMPING AREA
Distance (kilometers)	1.27E+00
Sector	WNW
Occupancy Factor	5.48E-03 (4.80E+01 hr/yr)
Age Group	CHILD

Ground Level Releases:	
Noble Gas X/Q (sec/m3)	7.03E-06
Particulate X/Q (sec/m3)	6.27E-06
Particulate D/Q (m-2)	1.80E-08
Mixed Mode Releases:	
Noble Gas X/Q (sec/m3)	N/A
Particulate X/Q (sec/m3)	N/A
Particulate D/Q (m-2)	N/A
Elevated Releases:	
Noble Gas X/Q (sec/m3)	2.38E-08
Particulate X/Q (sec/m3)	2.33E-08
Particulate D/Q (m-2)	1.21E-09

	Units	Quarter 3	Quarter 4	Quarters 3 and 4	Year to Ending Date
Bone	mrem	1.66E-06	2.59E-06	4.25E-06	6.47E-06
Liver	mrem	8.38E-06	7.93E-06	1.63E-05	3.26E-05
TBody	mrem	8.38E-06	7.93E-06	1.63E-05	3.26E-05
Thyroid	mrem	1.13E-05	1.01E-05	2.14E-05	4.09E-05
Kidney	mrem	8.39E-06	7.93E-06	1.63E-05	3.27E-05
Lung	mrem	8.41E-06	7.95E-06	1.64E-05	3.28E-05
GI-LLI	mrem	8.38E-06	7.92E-06	1.63E-05	3.26E-05

TABLE 4-1
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSE TO A MEMBER OF THE PUBLIC
DUE TO ACTIVITIES INSIDE THE SITE BOUNDARY
Unit: Site

Starting: 01-Jul-2001 Ending: 31-Dec-2001

Location Name	RECREATION AREA
Distance (kilometers)	1.03E+00
Sector	SSE
Occupancy Factor	2.37E-02 (2.08E+02 hr/yr)
Age Group	CHILD

Ground Level Releases:	
Noble Gas X/Q (sec/m3)	6.42E-06
Particulate X/Q (sec/m3)	5.73E-06
Particulate D/Q (m-2)	2.36E-08
Mixed Mode Releases:	
Noble Gas X/Q (sec/m3)	N/A
Particulate X/Q (sec/m3)	N/A
Particulate D/Q (m-2)	N/A
Elevated Releases:	
Noble Gas X/Q (sec/m3)	3.30E-08
Particulate X/Q (sec/m3)	3.21E-08
Particulate D/Q (m-2)	1.56E-09

	Units	Quarter 3	Quarter 4	Quarters 3 and 4	Year to Ending Date
Bone	mrem	6.69E-06	1.04E-05	1.71E-05	2.74E-05
Liver	mrem	3.33E-05	3.16E-05	6.48E-05	1.31E-04
TBody	mrem	3.33E-05	3.15E-05	6.48E-05	1.31E-04
Thyroid	mrem	4.50E-05	4.03E-05	8.53E-05	1.64E-04
Kidney	mrem	3.33E-05	3.16E-05	6.49E-05	1.31E-04
Lung	mrem	3.34E-05	3.16E-05	6.50E-05	1.32E-04
GI-LLI	mrem	3.33E-05	3.15E-05	6.48E-05	1.31E-04

TABLE 4-1
E. I. HATCH NUCLEAR PLANT
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT - 2001
DOSE TO A MEMBER OF THE PUBLIC
DUE TO ACTIVITIES INSIDE THE SITE BOUNDARY
Unit: Site

Starting: 01-Jul-2001 Ending: 31-Dec-2001

Location Name	VISITORS CENTER
Distance (kilometers)	6.94E-01
Sector	WSW
Occupancy Factor	4.57E-04 (4.00E+00 hr/yr)
Age Group	CHILD

Ground Level Releases:	
Noble Gas X/Q (sec/m3)	1.87E-05
Particulate X/Q (sec/m3)	1.72E-05
Particulate D/Q (m-2)	5.47E-08
Mixed Mode Releases:	
Noble Gas X/Q (sec/m3)	N/A
Particulate X/Q (sec/m3)	N/A
Particulate D/Q (m-2)	N/A
Elevated Releases:	
Noble Gas X/Q (sec/m3)	5.00E-08
Particulate X/Q (sec/m3)	4.97E-08
Particulate D/Q (m-2)	2.26E-09

	Units	Quarter 3	Quarter 4	Quarters 3 and 4	Year to Ending Date
Bone	mrem	2.70E-07	4.18E-07	6.88E-07	1.13E-06
Liver	mrem	1.81E-06	1.64E-06	3.45E-06	7.11E-06
TBody	mrem	1.81E-06	1.64E-06	3.44E-06	7.11E-06
Thyroid	mrem	2.48E-06	2.14E-06	4.62E-06	9.00E-06
Kidney	mrem	1.81E-06	1.64E-06	3.45E-06	7.12E-06
Lung	mrem	1.81E-06	1.64E-06	3.46E-06	7.16E-06
GI-LLI	mrem	1.81E-06	1.64E-06	3.44E-06	7.11E-06

5.0 Total Dose from Uranium Fuel Cycle (40 CFR 190)

5.1 Regulatory Requirements

The annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC due to releases of radioactivity and to radiation from uranium fuel cycle sources shall be limited to less than or equal to 25 mrems to the whole body or to any organ, except the thyroid, which shall be limited to less than or equal to 75 mrems.

5.2 Demonstration of Compliance

No dose limits stated in ODCM Sections 2.1.3, 3.1.3, and 3.1.4 were exceeded. Therefore, compliance with 40 CFR 190 dose limits was demonstrated in accordance with the requirements of ODCM Section 5.1.3.

6.0 Meteorological Data

The Radioactive Effluent Release Report, to be submitted by May 1 of each year, shall include an annual summary of hourly meteorological data collected over the previous year. This annual summary may be either in the form of an hour-by-hour listing of wind speed, wind direction, atmospheric stability, and precipitation (if measured), on magnetic tape, or, in the form of joint frequency distributions of wind speed, wind direction and atmospheric stability.

In lieu of submission with the Radioactive Effluent Release Report, the licensee has retained this summary of required meteorological data on site in a file. It will be provided to the NRC upon request.

7.0 Program Deviations

7.1 Inoperable Liquid or Gaseous Effluent Monitoring Instrumentation

7.1.1 Regulatory Requirements

ODCM, Chapter 7, Section 7.2.2.6.2 states that the Radioactive Effluent Release Report shall include deviations from the liquid and gaseous effluent monitoring instrumentation operability requirements included in Sections 2.1.1 and 3.1.1, respectively.

7.1.2 Description of Deviations

There were no deviations from the liquid and gaseous effluent monitoring instrumentation operability requirements during this reporting period.

7.2 Tanks Exceeding Curie Content Limits

7.2.1 Regulatory Requirements

ODCM 7.2.2.6 states in part that the report shall include notifications if the contents within any outside temporary tank, for liquids, exceed the limit of Technical Specification 5.5.8.b.

7.2.2 Description of Deviations

There were no outside temporary tanks, for liquids, that exceeded the limit of Technical Specification 5.5.8.b during this reporting period.

7.3 Effluent Sample Analysis Exceeding Minimum Detectable Concentration (MDC)

7.3.1 Regulatory Requirements

ODCM 7.2.2.6 states in part that deviations from MDC(s) required in Table 3-3 shall be included in the Radioactive Effluent Release Report.

7.3.2 Description of Deviation

There were no deviations from MDC(s) required in Table 3-3 during this reporting period.

8.0 Changes to the Plant Hatch Offsite Dose Calculation Manual (ODCM)

8.1 Regulatory Requirements

Pursuant to Technical Specification 5.5.1 and ODCM Section 7.2.2.5, licensee initiated changes shall be submitted to the NRC in the form of a complete, legible copy of the entire ODCM as part of or concurrent with the Radioactive Effluent Release Report for the period of the report in which any change in the ODCM was made. Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and shall indicate the date (i.e., month and year) the change was implemented.

8.2 *Description of Changes*

There were no changes to the ODCM in 2001.

9.0 *Major Changes to Liquid, Gaseous, or Solid Radwaste Treatment Systems*

9.1 *Regulatory Requirements*

The Radioactive Effluent Release Report shall include. . . . any major change to liquid, gaseous, or solid radwaste treatment systems pursuant to ODCM Chapter 7, Section 7.2.2.7.

9.2 *Description of Major Changes*

Gaseous Radwaste System

There were no major changes to the gaseous radwaste system during this reporting period.

Solid Radwaste System

There were no major changes to the solid radwaste system during this reporting period.

Liquid Radwaste System

There were no major changes to the Liquid Radwaste Treatment System during this reporting period.

SOUTHERN COMPANY

E. I. HATCH NUCLEAR PLANT

UNITS NO. 1 & 2

ANNUAL REPORT

JANUARY 1, 2001 - DECEMBER 31, 2001

APPENDIX A

Release of Radioactive RHR Service Water for 2001

The following historical information is provided to create a perspective for the release of radioactivity during the year 2001 relative to the RHR Service Water System.

In 1996, the analysis of samples from the Unit 1 RHR "B" Loop service water (RHRSW) system identified several radionuclides at very low concentrations. The first indication of contamination was noted on August 8,1996 and the second indication was noted on August 23, 1996. The total activity in the RHRSW contained within the heat exchanger, which has a volume of approximately 4000 gallons, was respectively estimated to be about 13.7 μCi and 25.6 μCi. On August 23, 1996 repairs were made to a Δp instrument in an effort to stop the inleakage into the service water side of the heat exchanger. To determine if the leak had been repaired, the service water loop of the heat exchanger was decontaminated by flushing and the service water in the loop was then resampled and analyzed. The circulating water flume has a blowdown line, which diverts a small portion of the total circulating water to the river via the discharge structure. This resulted in a release to an unrestricted area. Though this release was both monitored and controlled, it was not through the normally utilized liquid radwaste system but the release to the unrestricted area did in fact take the same release path to the river. The regulatory discreteness of this release is discussed in the 1996 evaluation of the release, which is documented in the 10CFR50.59 Evaluation titled "Unit 1 RHR Service Water: Release of Contaminated Water."

The requirements of the Radioactive Effluent Controls Program are spelled out in TS 5.5.4. The Offsite Dose Calculation Manual (ODCM) implements this program and it conforms to the requirements of 10CFR50.36a for the control of radioactive effluents and for maintaining the doses as low as reasonable achievable. Compliance with TS 5.5.4 regarding liquid releases can be assured by adhering to the requirements of ODCM sections 2.1.2, 2.1.3 and 2.1.4 which respectively provide limits on the concentration of the radioactive material at the point of release to an unrestricted area, the resultant dose to a member of the public from the release, and the necessity of using the radwaste treatment system.

MWO 1-96-02845 was worked during the Unit 1 outage to repair the leaks in the U1 RHR "B" Heat Exchanger. The RHR side of the Heat Exchanger was pressurized with helium and a helium detector on the RHRSW side was used to look for the presence of leaks. Based on this it was determined that one of the outermost tubes (tube 1-1) was definitely leaking. No other tubes were identified as definite leakers; however, the eight tubes closest to tube 1-1 were identified as possible leakers.

Integrated Technologies, Inc. performed an eddy current inspection of 245 of the tubes, including all of the suspected leakers and surrounding tubes. This inspection also identified tube 1-1 as a leaker. The tube breach is located next to the top support in the outlet leg. The cause is unknown. No other leaking tubes were identified.

The conservative decision was made to plug the leaker as well as the eight surrounding tubes. After plugging the tubes a hydrostatic pressure test was conducted at 300 psi and the Heat Exchanger was inspected for signs of leakage. No leakage was noted at this time. The Heat Exchanger was deconned, closed up and placed back in service. The Chemistry Department has sampled and monitored the activity during the operation of the Heat Exchanger.

The highest concentrations of radionuclides found in the RHRSW samples for 2001 were from 7/18/01, when the total concentration released was 1.11E-6 μCi/ml. As shown in the following table, the highest concentrations were found in 1997, when the total concentration released was 1.21 E-5 μCi/ml.

Radionuclide	1997 (μCi/ml)	1998 (μCi/ml)	1999 (μCi/ml)	2000 (μCi/ml)	2001 (μCi/ml)
Cr-51	1.07E-6				3.16E-7
Mn-54	2.37E-6	4.95E-7		2.49E-7	2.53E-7
Co-58	1.06E-6				
Fe-59					1.19E-7
Co-60	4.94E-6	1.12E-6	2.27E-8	2.82E-7	1.99E-7
Zn-65	2.06E-6	7.96E-8			2.24E-7
Cs-134	2.10E-7				
Cs-137	4.43E-7				

Fe-59 was identified in one sample(7/18/01). Heat exchanger testing and the analysis result indicates no new leaks to the system. The results of the samples analyzed in 2001 indicate we are monitoring residual contamination from the 1996 leaks.

ODCM section 2.1.2 requires that the concentrations of the radioactive materials released be limited to 10 times (10X) the concentrations specified in 10CFR20, Appendix B, Table 2, Column 2, with the exception for dissolved or entrained noble gases whose concentration shall be limited to 1 E-4 μCi/ml.

The following discussion is based on a release duration of 1 minute, a release volume of 4,000 gallons, a total dilution of only 10,000 gallons, and the radionuclide concentrations from 1997. This is a very conservative estimate, since credit for the additional dilution provided by the circulating water flume was not taken into consideration and the activity from 1997 was higher with more radionuclides. The sum of the ratios of the concentration of each radionuclide in the mixture to its effluent concentration limit (ECL) was 1.15. The sum of the ECL fractions must be less than ten (<10) to ensure that the concentration limit for the mixture is not exceeded. As can be seen, the sum is much less that ten. (10CFR20 Appendix B states that the sum of the fractions of the nuclides divided by their effluent concentration limits (ECLs) must be less than one. Further NRC guidance, Technical Specifications, and the ODCM allow the ECLs in Appendix B to be increased by a factor of 10. Mathematically this can be achieved by dividing the nuclides by the original 10CFR 20 Appendix B ECLs and insuring that the sum of the fractions is less than 10. The plant software performs the sum of the ECL fractions and comparisons this way to insure compliance with 10CRF20 limits.)

ODCM section 2.1.3 requires that the annual dose to a member of the public, in unrestricted areas, due to liquid releases from each unit be limited to 3 mrem to the total body and 10 mrem to any organ. The dose in any quarter is limited to half of the annual limits. Dose calculations were performed for this release, in accordance with ODCM section 2.4, to evaluate the doses relative to this release. The total body dose was 6.66 E-5 mrem (2.2 E-3 % of its annual limit) and the highest organ dose was 7.39 E-5 mrem to the GI-LLI, gastrointestinal track, (7.4 E-4 % of its annual limit). The resultant doses are quite low and essentially do not contribute to the quarterly and/or the annual dose limits. This provides a high degree of assurance that the release in no way presented a threat to the health and safety of a member of the public, even using the very low dilution rate. With a higher dilution

value the ECL fraction and the resultant doses are reduced further and become even less significant.

ODCM section 2.1.4 requires that the radwaste system be employed to reduce the radioactivity in the liquid waste prior to its discharge whenever the projected dose due to the release would exceed 0.06 mrem to the total body and 0.2 mrem to any organ. As shown in the previous paragraph, the total body dose due to the release of the RHRSW was much less than 0.06 mrem and the maximum organ dose was much less than 0.2 mrem.

10CFR20.1302 (b)(I) requires that a licensee show compliance with the annual limit of 100 mrem to any member of the public by demonstrating that certain concentration limits of the effluent at the point of release are not exceeded. This was addressed above in the assessment of ODCM section 2.1.2.

10CFR20.1501 (a)(2)(ii) & (iii) requires the licensee to evaluate the concentration or quantities of radioactive materials and the potential radiological hazard, respectively. The concentrations and quantity of the radioactive materials in the release was evaluated by sampling and analysis as discussed above. The potential radiological hazard was also evaluated by performance of the dose calculations, which would be a result of the release, as discussed above in the assessment of ODCM section 2.1.3.

This release does not constitute a Licensee Event Report (LER) based on the following. 10CFR 50.73 (A)(2)(VIII)(B) requires the licensee to report any liquid effluent release which exceeds 20 times the applicable concentration specified in 10CFR20, Appendix B, Table 2, column 2, at the point of entry into the receiving waters (i.e., unrestricted area). This is justified as discussed above in the assessment of ODCM section 2.1.3; it can be seen that the concentrations are much less that the applicable limits.

Design Criterion 64 in Appendix A to 10CFR50 requires the monitoring of effluent discharge paths. Performance of the sampling and analysis of the RHRSW service water before its release complied with this criterion.

Compliance with Appendix I to 10CFR50 was assured by adherence to the applicable ODCM sections as discussed above. Furthermore, Appendix I is the bases for one of these ODCM sections.

40CFR190 is concerned with the annual dose to any member of the public due to releases of radioactivity and to radiation from the uranium fuel cycle sources. This is addressed by TS 5.5.4.j and implemented by ODCM section 5.1.2, which states that additional calculation and reporting is required when any of the dose limits as specified in the ODCM sections 2.1.3, 3.1.3, or 3.1.4 are exceeded by a factor of two. This requirement is not applicable for the release based on the doses as discussed above in the assessment of ODCM section 2.1.3.

NRC Bulletin 80-10, "Contamination of Nonradioactive Systems and Resulting Potential for Unmonitored, Uncontrolled Releases of Radioactivity to the Environment" lists four actions for the licensee. First: identify the affected systems; the Unit 1 RHR "B" loop was identified. Second: establish a sampling/analysis of monitoring program for the affected systems; this was done. Third: restrict use of the system until the cause of the contamination is identified and corrected, and the system is decontaminated. The release was the result of identifying the leakage, implementation of corrective action and of decontaminating the system. The third action also states, that, if it is considered necessary to continue operation of the system as contaminated, then a 10CFR50.59 evaluation must be performed. This was done in 1996. The fourth action calls attention to the regulations to be complied with and states that releases must be monitored and controlled. The release of the RHR service water was sampled and monitored (evaluated) by the sampling and analysis prior to the flush taking place; the release was controlled in the fact that the flush was a planned evolution.

Administrative controls and sampling have been established to ensure that any future releases would be within 10CFR20 limits, reference Lab Standing Order, SO-HPC-001-0402, and 64CH-ADM-001-0S.

NUMBER: N/A PROPOSED REVISION: N/A

❶ TITLE: UNIT 1 RHR SERVICE WATER: RELEASE OF CONTAMINATED WATER

DOCUMENT TYPE DEFICIENCY RELATED SAFETY EVALUATION

❷ **SYNOPSIS OF THE "ACTIVITY" TO WHICH THIS EVALUATION APPLIES:**

Release of Radioactive RHR Service Water

An analysis of samples from the Unit 1 RHR "B" Loop service water (RHRSW) system, identified several radionuclides at very low concentrations. The first indication of contamination was noted on August 8, 1996 and the second indication was noted on August 23, 1996. The total activity in the RHRSW contained within the heat exchanger, which has a volume of around 4000 gallons, was respectively estimated to be about 13.7μCi and 25.6 μCi. On August 23, 1996 repairs were made to a Δp instrument which was found to be leaking by in an effort to stop the leak into the service water side of the heat exchanger. To determine if the leak had been repaired, the service water loop of the heat exchanger was decontaminated by flushing and the service water in the loop was then resampled and analyzed. The circulating water flume has a blowdown line which diverts a small portion of the total circulating water to the river via the discharge structure. This resulted in a release to an unrestricted area, though this release was both monitored and controlled, it was not through the normally utilized liquid radwaste system but the release to the unrestricted area did in fact take the same release path to the river. The regulatory discreteness of this release is discussed below by evaluating the release, using the higher of the two activities for conservatism, for compliance with the relevant sections of the Technical Specifications (TS), the ODCM, the Code of Federal Regulations and other regulatory documents.

The requirements of the Radioactive Effluent Controls Program are spelled out in TS 5.5.4. This program is implemented by the Offsite Dose Calculation Manual (ODCM) and it conforms to the requirements of 10CFR50.36a for the control of radioactive effluents and for maintaining the doses as low as reasonably achievable. Compliance with TS 5.5.4 regarding liquid releases can be assured by adhering to the requirements of ODCM section 2.1.2, 2.1.3 and 2.1.4 which respectively provide limits on the concentration of the radioactive material at the point of release to an unrestricted area, the resultant dose to a member of the public from the release, and the necessity of using the radwaste treatment system.

ODCM section 2.1.2 requires that the concentrations of the radioactive materials released be limited to 10 times (10X) the concentrations specified in 10CFR20, Appendix B, Table 2, Column 2, with the exception for dissolved or entrained noble gases whose concentration shall be limited to 1 E-4 μCi/ml.

The concentrations of the radionuclides found in the RHRSW sample, from August 23, 1996 and their corresponding 10CFR20 limits are as follows.

Radionuclide	Concentration (μCi/ml)	Limit (μCi/ml)
Mn-54	4.26 E-7	3 E-5
Co-60	7.75 E-7	3 E-6
Zn-65	3.93 E-7	5 E-6
Xe-135	9.67 E-8	1 E-4

The following discussion is based on a release duration of 1 minute, a release volume of 4,000 gal and a total dilution of only 10,000 gal. This is very conservative estimate, since credit for the additional dilution provided by the circulating water flume was not taken into consideration. The sum of the ratios of the concentration of each radionuclide in the mixture to its effluent concentration limit (ECL) was 0.14. The sum of the ECL fractions must be less than ten (<10) to ensure that the concentration limit for the mixture is not exceeded. As can be seen, the sum is much less than ten.
(10CFR20 Appendix B states that the sum of the fractions of the nuclides divided by their effluent concentration limits (ECLs) must be less than one. Further NRC guidance, Technical Specifications, and the ODCM allow the ECLs in Appendix B to be increased by a factor of 10. Mathematically this can be achieved by dividing the nuclides by the original 10CFR20 Appendix B ECLs and insuring that the sum of the fractions is less than 10. The plant software performs the sum of the ECL fractions and comparison this way to insure compliance with 10CFR20 limits.)

ODCM section 2.1.3 requires that the annual dose to a member of the public in unrestricted areas due to liquid releases from each unit be limited to 3 mrem to the total body and 10 mrem to any organ. The dose in any quarter is limited to half of the annual limits. Dose calculations were performed for this release, in accordance with ODCM section 2.4, to evaluate the doses relative to this release. The total body dose was 2.31 E-6 mrem (7.7 E-5 % of its annual limit) and the highest organ dose was 1.11 E-5 mrem to the GI-LLI, gastrointestinal track, (1.1 E-4 % of its annual limit). The resultant doses are quite low and essentially do not contribute to the quarterly and/or the annual dose limits. This provides a high degree of assurance that the release in no way presented a threat to the health and safety of a member of the public, even using the very low dilution rate. With a higher dilution value the ECL fraction and the resultant doses are reduced further and become even less significant.

ODCM section 2.1.4 requires that the radwaste system be employed to reduce the radioactivity in the liquid waste prior to its discharge whenever the projected dose due to the release would exceed 0.06 mrem to the total body and 0.2 mrem to any organ. As shown in the previous paragraph, the total body dose due to the release of the RHRSW was much less than 0.06 mrem and the maximum organ dose was much less than 0.2 mrem.

10CFR20.1302(b)(i) requires that a licensee show compliance with the annual limit of 100 mrem to any member of the public by demonstrating that certain concentration limits of the effluent at the point of release are not exceeded. This was addressed above in the assessment of
ODCM section 2.1.2.

10CFR20.1501(a)(2)(ii) & (iii) requires the licensee to evaluate the concentration or quantities of radioactive materials and the potential radiological hazard, respectively. The concentrations and quantity of the radioactive materials in the release was evaluated by sampling and analysis as discussed above. The potential radiological hazard was also evaluated by performance of the dose calculations which would be a result of the release, as discussed above in the assessment of
ODCM section 2.1.3.

This release does not constitute a Licensee Event Report (LER) based on the following.
10CFR50.73(a)(2)(viii)(B) requires the licensee to report any liquid effluent release which exceeds 20 times the applicable concentrations specified in 10CFR20, Appendix B, Table 2, column 2, at the point of entry into the receiving waters (i.e., unrestricted area). This is justified as discussed above in the assessment of ODCM section 2.1.3, it can be seen that the concentrations are much less than the applicable limits.

Design Criterion 64 in Appendix A to 10CFR50 requires the monitoring of effluent discharge paths. This criterion was complied with by performance of the sampling and analysis of the RHRSW service water before its release.

Compliance with Appendix I to 10CFR50 was assured by adherence to the applicable ODCM sections as discussed above. Furthermore, Appendix I is the bases for one of these ODCM sections.

40CFR190 is concerned with the annual dose to any member of the public due to releases of radioactivity and to radiation from the uranium fuel cycle sources. This is addressed by TS 5.5.4.j and implemented by ODCM section 5.1.2, which states that additional calculation and reporting is required when any of the dose limits as specified in the ODCM sections 2.1.3, 3.1.3 or 3.1.4 are exceeded by a factor of two. This requirement is not applicable for the release based on the doses as discussed above in the assessment of ODCM section 2.1.3.

NRC Bulletin 80-10, "Contamination of Nonradioactive Systems and Resulting Potential for Unmonitored, Uncontrolled Releases of Radioactivity to the Environment" lists four actions for the licensee. First: identify the affected systems; the Unit 1 RHR "B" loop was identified. Second: establish a sampling/analysis or monitoring program for the affected systems; this was done. Third: restrict use of the system until the cause of the contamination is identified and corrected, and the system is decontaminated. The release was the result of identifying the leakage, implementation of corrective action and of decontaminating the system. The third action also states, that, if it is considered necessary to continue operation of the system as contaminated, then a 10CFR50.59 evaluation must be performed. At present, actions have been taken to preclude the use of the system except in the event of an emergency, a plan is being developed to investigate, repair the leakage and perform post repair samples to ensure the leak has indeed been repaired. The fourth action calls attention to the regulations to be complied with (these are all addressed above) and states that releases must be monitored and controlled. The release of the RHR service water was monitored (evaluated) by the sampling and analysis prior to the flush taking place; the release was controlled in the fact that the flush was a planned evolution. Dose calculations were performed after system operation.

To ensure that operation of the RHRSW system will not be adversely affected by the leak, the following cases have been considered:

Case 1. Normal Operation based on sample results
Case 2. Normal Operation with bounding assumptions
Case 3. LOSP with bounding assumptions
Case 4. LOCA/LOSP with the estimated small leakage rate
Case 5. LOCA/LOSP with bounding assumptions

Case 1 is address the previous discussions. Cases 2 thru 5 are discussed below. LOCA/LOSP is the most conservative accident for RHRSW operation and dose evaluation.

Case 2: Normal Operation with bounding assumptions

The reason for the above evaluation is to provide reasonable assurance that future operation of "B" RHRSW loop would not create releases in excess of 10CFR20, Technical Specification, or ODCM limits. This evaluation is further bounded by calculations performed using the following assumptions:
1) RHRSW loop completely fills with Suppression Pool/Torus water. After starting the RHRSW pump the system volume is flushed out to the flume in one minute and replaced with non-radioactive service water at a higher pressure than the RHR system which prevents further radioactive water from leaking into the RHRSW system.
2) Minimum dilution flowrate in the flume is 500,000 gpm.
3) RHRSW discharge flowrate is 4,000 gpm.
This data was put into the Effluent Management System (EMS) computer which performed the dose calculations and sum of the ECL fractions. The results are as follows:
The projected 31 day total body dose is 4.6E-05 mrem which is 0.077% of the 0.06 mrem limit.
The projected 31 day organ dose is 9.13E-05 mrem which is 0.046% of the 0.2 mrem limit.
The cumulative total body dose is 9.79E-05 mrem which is 0.0065% of the quarterly 1.5 mrem limit.
The cumulative organ dose is 1.94E-05 mrem which is 0.00039% of the quarterly 5.0 mrem limit.
The sum of the ECL fractions is 2.7 which is less than the 10 limit.

Consideration was give to RCS water going in the RHRSW system. However, this is not considered to be a credible event. During normal operation, the RHR system is pressurized via the jocky pumps, using torus water. Thus, the worst case would be if Torus water completely filled the RHRSW loop. This is the case described above. RHR is used to circulate RCS water in the shutdown cooling mode during shutdown operation. In this case, RHRSW would be started before RHR, and the worst case initially would be torus water. If the system were shutdown and restarted during a shutdown, RCS water would not be expected to displace the RHRSW system volume, thus the torus water case is considered to be bounding.

A calculation was also performed using MICROSHIELD to estimate the dose to an individual standing at the RHRSW pipe opening where the water would dump into the flume. Using the assumption from above that all the contaminated water would pass that point in one minute, MICROSHIELD calculated the dose rate at 2.217E-02 mrem/hr which gives a dose to an individual in that one minute equal to 0.00037 mrem which is much less than any dose limit for a member of the public.

Case 3. LOSP with bounding assumptions

If LOSP is considered without a LOCA, then the initial conditions can be assumed to be the same as for normal operation. The circulating water pumps would trip, so dilution by mixing of the circulating water flow stream would not be available. However, the discharge of RHRSW will mix with the flume volume. The volume of the flume from RHRSW discharge pit to the point that the flume overflows to the river is estimated to be about 1,000,000 gallons, diluted with 500,000 gpm is conservatively terminated after one minute, due to the expected RHRSW flowrate of 4,000 gpm. No credit was taken for any mixing of the remainder of the circulating water system volume, and the circulating water pumps are assumed to trip in this case, at the onset of the accident.

Case 4. LOCA/LOSP with the estimated small leakage rate

Consideration was given to LOCA/LOSP post-accident operation of the RHRSW system. Contamination of the RHR system could be very high due to water coming in contact with potentially failed fuel. This water could be transported to the RHRSW system via leakage between the system interfaces. However, the leakage into the RHRSW system is very small. This is evidenced by sampling and analysis of the water in the RHRSW system over time, during normal operation. Samples taken near the heat exchanger show contamination levels much less than that of torus water, which was taken s the bounding case during normal operation. Samples taken further away from the heat exchanger in upstream piping have shown no contamination. Also, during normal operation, the RHR system is pressurized by the jockey pump system, and has been observed to be about 60 psig. RHRSW "B" Loop system pressure has been observed to be 0 psig. Any significant leakage would be expected to pressurize the RHRSW loop. It follows that nay leakage into the RHRSW system prior to post accident operation would be very small. Although there are no time limits for starting RHRSW after an accident, analysis assumes that RHRSW will be started at 10 minutes following an accident which could lead to fuel failure, and thus increase the contamination present in the torus water. During post accident operation, no leakage to RHRSW can occur. Determining the actual leakage rate prior to starting the system is very difficult, thus, rigorous calculations have not been performed. However, samples taken near the heat exchanger within 8 hours after flushing the RHRSW system showed contamination levels about 1,000 times less than that of Torus water. Taking the volume of the RHRSW in the heat exchanger of about 1320 gallons (not taking credit for the piping volume), the leakage rate could be estimated to be as small as 0.0027 gpm, with the RHR system at 60 psig, or about 0.005 gpm with the RHR system operating in the LPCI mode, at about 205 psig, taking suction from the Torus. The sensitivity of post-accident dose to various leakage rates have been previously considered in the evaluation for DCR 94-045, at a leak rates from 0.1 gpm to 50 gpm (using accident source terms for torus water). Resultant dose rates at 0.1 gpm (much grater than estimated leakage) are very small, and are within the licensing basis for 10CFR100 limit following an accident.

Case 5. LOCA/LOSP with bounding assumptions

As discussed, the leakage rate during normal operation and post-accident is very small, and expected radiological consequences are not increased. However, because actual leakage rate cannot be easily determined, and for added conservatism, we can assume that 4,000 gallons of Torus Water leaks into the RHRSW system prior to starting the system. Assuming that the system is started in 10 minutes, the leakage rate is 400 gpm. This is roughly equivalent to a complete rupture of a heat exchanger tube, which is very conservative. Prior to starting the system, the RHRSW system valves are closed, and are expected to leak much less than 400 gpm. In order to achieve this leakage rate, the operator would have to open the discharge valve, and then start the RHRSW pump 10 minutes later, or a gross valve failure must occur prior to system startup. This would require a complete tube failure and failure of the operator to start the pump within a reasonable time, or a tube failure with a valve failure. Either of these scenarios would involve more than one failure, which would not be credible event. However, to apply bounding conservatism, dose is calculated assuming this amount of leakage. Using source terms for post-accident torus water, assuming fuel failure, with 500,000 gallon dilution factor, and a release rate of 4,000 gpm,then the resultant dose to the public is about 0.163 Rem Whole Body, and about 35.4 Rem Organ Dose. This is within the licensing basis for 10 CFR100 limits of 25 Rem Whole Body and 300 Rem Organ Dose, after adding this dose to dose from all other sources (ref. Bechtel Calculation 305, rev. 0 vol. 3, binder 24, folder 2339 for source term concentrations). The dilution factor was determined to be about 1/2 of the volume of the flume between the RHRSW discharge point and the flume overflow to the river, which is equivalent to the LOSP case. No credit was taken for any mixing of the remainder of the circulating water system volume, and the circulating water pumps are assumed to trip in this case, at the onset of the accident.

Administrative controls and sampling have been established to ensure that any future releases would be within 10CFR20 limits, reference Lab Standing Order, SO-HPC-001-0896.

❷

ONCE A SCREENING QUESTION IS ANSWERED "YES", THE REMAINDER OF THE SCREENING QUESTIONS ARE NOT REQUIRED TO BE ANSWERED.

10 CFR 50.59 SCREENING (i.e., BLOCKS ❸ AND ❹):

☐ YES ; ☒ NO

Is the "ACTIVITY" itself a change to one of the following, OR is a change to one of the following required as a result of the "ACTIVITY":

a. **the Technical Specifications and / or the Environmental Protection Plan incorporated in the Operating License, OR**

b. **other licensing document(s) as defined in 00AC-REG-003-0S?**

BASIS FOR ANSWER:

❸ The event described in the synopsis does not cause a change to any licensing document because this is simply the description of and the relative evaluations for a release via the RHRSW system to an unrestricted area (the river) and a means to provide documentation for the evaluation for the safety related significance of the event.

IF the answer is "YES", complete the CONTROL OF CHANGES TO LICENSING DOCUMENTS form, AND make it a part of the 10 CFR 50.59 EVALUATION package.

10 CFR 50.59 SCREENING (CONTINUED):

IF APPLICABLE / DESIRED, GO DIRECTLY TO A QUESTION THAT HAS A "YES" ANSWER

Does the "ACTIVITY" to which this evaluation applies represent:

1. ☐ YES ☒ NO **A change to the plant (EITHER temporary OR permanent) as described in the FSAR?**

BASIS FOR ANSWER:

This event did not change the plant in any way. The plant systems, structures and components were not effected or altered by this activity.

2. ☒ YES ☐ NO **A change to procedures described in the FSAR?**

❹ **BASIS FOR ANSWER:**

This is an evaluation of an event and does not cause a change to the FSAR in any way but the RHRSW to flume as a pathway for the release is different from the routine release via the radwaste system. The systems and procedures used for their operation were not effected, the systems were operated as described within the FSAR, thus no change to the FSAR exists.

3. ☐ YES ☒ NO **A test or experiment not described in the FSAR?**

BASIS FOR ANSWER:

This event was neither a test or experiment but a release via the RHRSW system. The safety related function of plant equipment, structures or components required for the safe operation and shutdown was not affected by this event nor was the health and safety of the public threatened by event.

IF the answers to ALL the questions in Blocks ❸ and ❹ are "NO," complete Blocks ❺ through ❼.

IF the answer to ANY question in Blocks ❸ and ❹ is "YES," complete Blocks ❺ through ❽.

❼ PREPARED: _____ DATE: / /

REVIEWED: _____ DATE: / /

APPROVED: _____ DATE: / /

SAFETY EVALUATION

1. ☐ YES ☒ NO **Does the proposed "ACTIVITY" increase the probability of occurrence of an accident previously evaluated in the FSAR?**

BASIS FOR ANSWER:

The RHR, RHRSW, and heat exchanger are not affected by the small amount of radioactive inleakage into the RHRSW. The RHR and RHRSW system will continue to operate as designed providing the required heat sink as described in the FSAR.

2. ☐ YES ☒ NO **Does the proposed "ACTIVITY" increase the (radiological) consequences of an accident previously evaluated in the FSAR?**

BASIS FOR ANSWER:

8 The leakage path into the RHRSW does not occur during periods of RHRSW operation due to the fact that the RHRSW is at a higher pressure. The leakage would be from the RHRSW into the system being cooled. During normal operation of the system, release of contamination into an unrestricted area is not a credible event. As shown in the synopsis, the slight amount of activity that could possibly be flushed to the flume and the tremendous dilution provided, the radiological consequences would be negligible and therefore not be increased.

3. ☐ YES ☒ NO **Does the proposed "ACTIVITY" increase the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the FSAR?**

BASIS FOR ANSWER:

The operation of the RHR system is not affected by the small amount of inleakage as previously discussed and does not increase the probability of malfunction of any equipment important to the operation and shutdown of the plant. A catastrophic failure of a tube would not affect the operability of the system because the tube failure would not prevent the RHRSW from providing the required cooling to the system.

4. ☐ YES ☒ NO **Does the proposed "ACTIVITY" increase the (radiological) consequences of a malfunction of equipment important to safety previously evaluated in the FSAR?**

BASIS FOR ANSWER:

Due to the fact that the RHRSW operates at a higher pressure, any additional leakage in the heat exchanger would be from RHRSW into the system being cooled. Therefore, no increase in consequences is introduced. When the system is not in operation, the radiological consequences have been evaluated to have no adverse impact on public health and safety.

SAFETY EVALUATION

5. ☐ YES ☒ NO **Does the proposed "ACTIVITY" create the possibility of an accident of a different type than any previously evaluated in the FSAR?**

BASIS FOR ANSWER:

The suspected leakage in the heat exchanger would not reduce the effectiveness of the RHR system in providing the required cooling and therefore, does not create the possibility of a different type accident.

6. ☐ YES ☒ NO **Does the proposed "ACTIVITY" create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the FSAR?**

BASIS FOR ANSWER:

⑧ Due to the fact that the RHRSW operates at a higher pressure, any additional leakage in the heat exchanger would be from RHRSW into the system being cooled. Therefore, no increase in the possibility of malfunction is introduced. During normal operation with RHRSW not operating, any radioactivity detected will be measured and evaluated.

7. ☐ YES ☒ NO **Does the proposed "ACTIVITY" reduce the margin of safety as defined in the basis for any Technical Specification?**

BASIS FOR ANSWER:

The activity does not affect the margin of safety because the Tech Spec. limitations as specified within Section 5.5.4 are met as previously discussed.

IF a change to the Technical Specifications or the Environmental Protection Plan is required, OR, IF *ANY* of the questions in Block ⑤ is answered "*YES*," an unreviewed safety question *IS* indicated. In that case, approval from the NRC is required BEFORE the "ACTIVITY" can be implemented. Refer to subsection 8.5.1.2 for guidance on exceptions to this.